

APPENDIX D
PUBLIC MEETING TRANSCRIPTS

Public Meeting Transcripts

This appendix contains the official transcripts from the public meetings held on May 12, May 14, and June 20, 2001 for the purpose of commenting on the Proposed Plan for OU-2. The transcripts were reviewed and several corrections were noted to the official transcripts. The corrections pertaining to each public meeting are as follows:

Court Reporter #1, Vickie Blair: Public Meeting held May 12, 2001

NUMBER	PAGE	LOCATION	CORRECTION
1	5	Line 1,5,and 6	“NAFAC” should be “NAVFAC”
2	7	Line 18	“vado zone” should be “vadose zone”
3	9	Line 24	“remediate” should be “remedial”
4	10	Line 8	“vado zone” should be “vadose zone”
5	25	Line 13	“gasses” should be “gases”

Court Reporter #2, Leslie MacNeil: Public Meeting held May 12, 2001

NUMBER	PAGE	LOCATION	CORRECTION
1	5	Line 11,14,and 15	“NAVFEK” should be “NAVFAC”
2	10	Line 9	“arroyo” should be “Arroyo”
3	18	Line 11	“you” should be “up”
4	27	Line 3	“been” should be “then”
5	36	Line 10	“THE FLOOR” should be “MS. TUTT”

Court Reporter #1, Vickie Blair: Public Meeting held May 14, 2001

NUMBER	PAGE	LOCATION	CORRECTION
1	5	Line 2,5,and 7	“NAFAC” should be “NAVFAC”
2	8	Line 13	“NASA/JPL” should be “NASA-JPL”
3	9	Line 7	“sound” should be “found”
4	9	Line 13	“remedial investigation feasibility study” should be “remedial investigation/feasibility study”
5	10	Line 17	“faculties” should be “facilities”
6	13	Line 5	“Faculties” should be “Facilities”
7	19	Line 1	“our on” should be “on our”

Court Reporter #2, Leslie MacNeil: Public Meeting held May 14, 2001

NUMBER	PAGE	LOCATION	CORRECTION
1	5	Line 9,12,and 13	“NAVFEC” should be “NAVFAC”
2	7	Line 15	Replace “standard” with “state”
3	8	Line 23	“won’t” should be “want to”
4	9	Line 18	“arroyo” should be “Arroyo”
5	13	Line 6	“random” should be “ran the”

Court Reporter, Vickie Blair: Public Meeting held June 20, 2001

NUMBER	PAGE	LOCATION	CORRECTION
1	5	Line 14, 17, and 19	“NAFAC” should be “NAVFAC”
2	8	Line 9	“congress” should be capitalized
3	10	Line 16	“depositories” should be “repositories”
4	11	Line 25	“1,1, -cichloroethene” should be “1,1,-dichloroethene”
5	19	Line 16	“private road” should be capitalized
6	19	Line 17	“south gate” should be capitalized
7	21	Line 7	“taking” should be “talking”
8	21	Line 13	“immediately” should be “immediatly”
9	26	Line 3	“depositories” should be “repositories”
10	28	Line 21	“Cynthis”, I believe her name was Cynthia.
11	30	Line 3	“RPN” should be “RPM”
12	30	Line 3	“RPN” should be “RPM”
13	30	Line 20	Insert to read: “vapor samples”
14	32	Line 24	“rain basin” may be “Raymond Basin”
15	33	Line 4	“rain basin” may be “Raymond Basin”
16	34	Line 24-25	“responses in the summary” should be “responsiveness summary”
17	37	Line 10	“air circulating” should be “soil vapor
18	37	Line 22	“Britta” should be “Brita”
19	38	Line 11	“Force Wheeler” should be “Foster
20	38	Line 21	“Geofund” should be “Geofon”
21	39	Line 8	“Geofund” should be “Geofon”
22	39	Line 23	“Geofund” should be “Geofon”

NUMBER	PAGE	LOCATION	CORRECTION
23	40	Line 2,3, 10, 16	“Patel” should be “Battelle”
24	40	Line 5	[unintelligible] should be “Proposed”
25	40	Line 13, 19	“Geofund” should be “Geofon”
26	57	Line 11	“response [unintelligible]” should read “responsiveness summary”
27	57	Line 22-23	“response to summary” should be “responsiveness summary”
28	58	Line 2	“Mr. Compton” should be “Ms. Compton”
29	58	Line 8	“Response in the summary” should be “responsiveness summary”
30	64	Line 8	“hearing” should be “meeting”
31	64	Line 15	“response summary” should be “responsiveness summary”
32	65	Line 1	“information depositories” should be “information respositories”
33	67	Line 6, 8	“information depositories” should be “information respositorie

PUBLIC MEETING AND PUBLIC COMMENT PERIOD

JET PROPULSION LABORATORY

PASADENA, CALIFORNIA

SATURDAY, MAY 12, 2001

1:00 P.M. to 4:00 P.M.

Reported by:

Vickie Blair

C.S.R. No. 8940, RPR-CRR

<p style="text-align: right;">Page 2</p> <p>1 PASADENA, CALIFORNIA; SATURDAY, MAY 12, 2001 2 1:00 P.M. 3 ---000---</p> <p>5 MR. SAUNDERS: Good afternoon. Welcome to the Jet 6 Propulsion Laboratory. Thank you for taking the time to 7 attend this meeting on a Saturday afternoon. 8 My name is Lee Saunders. I'm an 9 environmental public affairs officer for the U.S. Navy and 10 your facilitator for today's meeting about the proposed 11 plan to select a remedy to clean up soils at the National 12 Aeronautics and Space Administration, Jet Propulsion 13 Laboratory, located here in Pasadena. 14 Prior to this meeting, you had the 15 opportunity to speak to NASA, federal, and other local 16 leading regulatory agency representatives on a one-to-one 17 basis about the proposed cleanup actions. During this 18 portion of the meeting, you, the community, can provide 19 questions and comments to these representatives and their 20 agencies on the proposed plan. These comments and 21 questions will be included in a meeting transcript and 22 become part of the final decision made for soil cleanup at 23 JPL. 24 Representing the agencies responsible for 25 the cleanup and talking to you about the proposed plan and</p>	<p style="text-align: right;">Page 4</p> <p>1 to write down your questions during the presentations in 2 case you have some questions that you develop and you just 3 feel you can't wait until the time comes. But that will 4 help you keep track of what those questions are. 5 To ensure that everyone that wishes to make 6 a comment or ask a question has a fair and equal 7 opportunity to do so, we ask that you limit your comments 8 or questions to two minutes. At the end of this time, 9 please take your seat. If you have not finished your 10 remarks, you may continue for another three-minute period 11 after we've heard from all the other speakers. 12 We have a court reporter -- actually, we 13 have two court reporters here today, so we ask you to 14 please state your first and last name and spell your last 15 name before you begin your comments or questions. 16 If you do not wish to provide verbal 17 comments or questions, you may also submit your comments 18 and questions in writing. There are comment sheets that I 19 just mentioned a moment ago available on the tables in the 20 back for those of you in the audience who would prefer not 21 to give your input or comments verbally at this meeting. 22 For those of you wondering why the U.S. Navy 23 is involved with the environmental cleanup of a NASA 24 facility, the explanation is fairly simple. In 1999, NASA 25 and the Naval Facilities Engineering Command, who I work</p>
<p style="text-align: right;">Page 3</p> <p>1 its remedial alternatives are agency representatives who 2 will each introduce themselves starting from my left here. 3 MR. ROBLES: Peter Robles from NASA. 4 MR. ZUROMSKI: Richard Zuromski from the Naval 5 Facilities Engineering Command. 6 MR. GEBERT: Richard Gebert from the State of 7 California Department of Toxic Substances Control. 8 MR. RIPPERDA: I'm Mark Ripperda from the U.S. EPA. 9 MR. YOUNG: I'm David Young from the Los Angeles 10 Regional Quality Control Board. 11 MR. SAUNDERS: All these representatives are what 12 we call remedial project managers that are responsible in 13 one way or form in the cleanup of this particular site. 14 Ground rules. I want to talk about ground 15 rules for today's meeting, which are as follows: This 16 afternoon's format will consist of presentations by 17 representatives about the proposed plan and remedial 18 alternatives, followed by a formal comment session where 19 you, the community, can provide us with your comments and 20 questions. 21 I'm going to ask you to please hold your 22 questions until the presentations have been completed. 23 Once we've heard from all the presenters, we will open the 24 floor for questions and comments. You may want to use the 25 sheets of paper that were distributed, the comment sheets,</p>	<p style="text-align: right;">Page 5</p> <p>1 for, who are commonly known by the acronym NAFAC, reached a 2 memorandum of agreement establishing roles and 3 responsibilities that state that NASA may procure 4 environmental engineering and consultancy services from 5 NAFAC and its subordinate commands. 6 In late 1999, NAFAC remained heavily 7 involved in providing environmental services to NASA JPL. 8 Peter Robles, our regional project manager from NASA, is 9 our first presenter. 10 Peter. 11 MR. ROBLES: Good afternoon. 12 The first thing we want to talk about is our 13 presentation. What we are going to present this afternoon 14 is a site description, regulatory framework, site 15 assessment and investigative activities, and our remedial 16 activity and proposed remediation alternatives. 17 In other words, we're going to go and follow 18 along what the booths in the back are in sequence so that 19 you can get a feel for the total history of this site. 20 There it is. Site description. The site 21 has been active since the late '30s to early '40s. It was 22 part of a project out of Cal Tech. The Army Ordnance took 23 over the site in the '40s and became the owner of the site, 24 and work was done here for the Army Ordnance service, 25 particularly during the World War II era.</p>

<p style="text-align: right;">Page 6</p> <p>1 At that time during the '40s and '50s, the 2 proper and acceptable way of disposing of chemicals was 3 done through what we call seepage pits. Seepage pits are 4 no more than bricks without the binding between them so 5 that things can seep out into the ground through them. At 6 that time, it was accepted. Most of that was working on 7 propulsion systems to support jet aircraft -- we call JATO, 8 jet assist to take-off rockets. Also reverse engineering 9 of V-II rockets from World War II and further on. 10 During the late '50s, early '60s, the Army 11 Ordnance was working in negotiating with NASA, and NASA 12 took over the site in 1959, 1960, at which time what we did 13 was we replaced the seepage pits with a sewer system so, 14 therefore, we could stop that type of activity. 15 Up until that time, there was not a problem 16 with the ground or soils in the area. But in '92 was when 17 the concern came about, and we were placed on the national 18 priorities list by EPA. And at that time that made us a 19 SuperFund site, which is the process that we have been 20 talking about these last couple of hours with you. That 21 process started in October of '92. We signed a federal 22 facility agreement, and the process started for us to 23 investigate the site. 24 Current activities right now is that all of 25 our operations meet federal and state and local</p>	<p style="text-align: right;">Page 8</p> <p>1 the future. We plan another meeting like this next year to 2 talk about remediating groundwater Operable Unit 1 and 3; 3 but for today, we want to focus on the soils. 4 And now I would like to turn this over to our 5 regulatory framework speaker, which is -- 6 MR. RIPPERDA: Thanks, Peter. 7 I'm Mark Ripperda from EPA, and I'm kind of 8 speaking for all the regulators, for Richard and David who 9 are here from the State of California. 10 But first I'd just like to ask that all of 11 you from the public go home and tell your friends, tell 10 12 friends each, how much fun this is, how much you learned, 13 and tell them that they have to come back on Monday night. 14 So what does it mean to be a SuperFund site, 15 and for that matter what is SuperFund? Congress, about 20 16 years ago, passed a law that put a tax on the chemical 17 industry, and that money from the chemical industry all 18 went into a trust fund that's called the SuperFund that EPA 19 is authorized to use to spend to clean up abandoned 20 hazardous waste sites. That same law also gave EPA the 21 authority to go after existing facilities such as NASA JPL 22 that have had releases that need to be cleaned up. 23 But before you become a SuperFund site, you 24 have to go through a rank process. EPA evaluates how bad 25 the site is, how bad the potential risk might be. And if</p>
<p style="text-align: right;">Page 7</p> <p>1 regulations. And, by the way, I was told by our people to 2 say this, that almost all, very small percentile, is ever 3 sent through disposal. We recycle and destroy as much as 4 we can here. And the fact is, this facility is the best in 5 NASA for recycling materials and chemicals that are used 6 here. And we do a lot of research here. But we meet all 7 federal, state, and local requirements, so current 8 operations is not a concern. We're talking about past 9 acceptable practices that we are trying to remediate. 10 Here is a site description of what we're 11 talking about, and here's the gist of the problem. Because 12 of the seepage pits and the stuff that was put in there, 13 they slowly -- and it takes years to migrate through the 14 soils and to reach the water table. 15 Our biggest concern is between 50 feet below 16 the surface all the way down to 200 feet. And the main 17 purpose of our discussion today is to talk about 18 remediating what we call Operable Unit 2 vado zone. "Vado 19 zone" is an engineering term for just the soils between the 20 surface to the water table. We want to remove this source 21 so that it stops migrating and impacting the environment. 22 And that's what our focus is today, about minimizing that, 23 removing that, and we have certain technologies that we 24 have tried. 25 NASA will address the groundwater issue in</p>	<p style="text-align: right;">Page 9</p> <p>1 you score high enough, you're put on the national 2 priorities list, which means you're a SuperFund site. And 3 right now there's about 2000 or so SuperFund sites. 4 So after the discovery of the release, and 5 for NASA JPL, that meant that the City of Pasadena found 6 chemicals in their drinking water wells -- I'm not sure 7 which way is east and west here -- over this way. Right 8 across the Arroyo, City of Pasadena had some drinking water 9 wells, and they found levels of chemicals in there that 10 were high enough that they needed to put a treatment system 11 on them. At that time, all that information is turned in 12 to EPA; we rank it and say, "Okay, this needs to be a 13 SuperFund site." 14 But the first thing that happened is that as 15 soon as the City of Pasadena found those chemicals, they 16 put treatment systems in. NASA had to reimburse the City 17 for that, and then NASA needs to start looking at their 18 site and determine where those chemicals came from, how 19 much there might be, and how best to clean it up so the 20 groundwater in the future is not getting either more 21 contaminated; and, in fact, we can start to clean up the 22 groundwater itself. 23 So to do that we do what is called a 24 remediate investigation and feasibility study. That means 25 we look through all the records, what kind of chemicals are</p>

<p style="text-align: right;">Page 10</p> <p>1 used on-site. NASA drilled bore holes all over the site. 2 They drilled monitoring wells to take samples of 3 groundwater both on-site and off-site. They sampled 4 drinking water wells from all over the area to try to 5 determine the extent of the problem and to design a way to 6 best clean it up. 7 And that brings us to about where we are now 8 for the vado zone soils. So NASA JPL have completed the 9 investigation of the soil zone, and they're making a 10 proposed plan to you, to the public, saying that, you know, 11 "We think we understand the problem. We think we know the 12 best way to clean it up, and what do you think?" You know, 13 both "What do you think of what we've done, and what do you 14 think of what we," NASA, not me, EPA, "is saying on how to 15 clean it up?" 16 So if you do have any, not just questions, 17 but if you have any comments on what they're proposing, 18 please make those either today or after the meeting in 19 writing. Let NASA know what you think. 20 At that point, NASA needs to respond to all 21 those comments. They'll do a written response that gets 22 sent out to the public; it gets sent to the regulators. 23 State of California people, and we at EPA review NASA's 24 response and say either, "Yeah, you did a good job 25 responding or not."</p>	<p style="text-align: right;">Page 12</p> <p>1 concerns you might have. 2 MR. ROBLES: Tell them about the cookies. 3 MR. RIPPERDA: And eat that table full of cookies. 4 Richard. 5 MR. ZUROMSKI: Thank you, Mark. 6 Hi. I think I've talked to some of you. My 7 name is Richard Zuromski. I'm with the Naval Facilities 8 Engineering Command, and I'm here today to talk to you 9 about the site assessment and investigation activities that 10 have been done here at JPL, and also what we're proposing 11 as a remedy for JPL OU-2. 12 First I'll start out with the remedial 13 investigation. From 1994 through 1998, JPL conducted the 14 remedial investigation in over nine sampling events, 15 different sampling events. They looked at 45 soil vapor 16 wells, 35 soil borings, and three test pits. Now, they've 17 also, at the end of that remedial investigation, 18 established 37 permanent monitoring points for soil vapor 19 that we monitor on a quarterly basis. So we are continuing 20 to monitor the extent of VOCs in the soil to date on a 21 quarterly basis. 22 The samples that we took during the remedial 23 investigation identified the extent to which the chemicals 24 were found in the soils. The results showed that there 25 were elevated levels of four different chemicals in the</p>
<p style="text-align: right;">Page 11</p> <p>1 And if everybody agrees that this is the 2 best way to go, then they'll do an actual legal document 3 called a "Record of Decision" where they say, "This is what 4 we're selecting to do." 5 And then from there, they actually design 6 the system. Right now they have a rough idea -- you know, 7 if you've been talking to us back there, you know they're 8 planning to put in about five bore holes. That's not set 9 in stone; that's an estimation of what we think would be 10 best. But actual -- after public comments are received and 11 the decision of record is signed, then the contractors will 12 do a more detailed study. And it will probably be five 13 bore holes plus or minus a little bit, but they'll do the 14 actual details of the design. 15 And after the soils are cleaned up, there 16 will still be long-term monitoring to make sure that the 17 remedy actually worked. And all of this is separate from 18 the groundwater system, which, as Peter said, will be 19 addressed in kind of six months to a year. There will be 20 another meeting with another proposed plan on how NASA 21 plans to clean up the groundwater. 22 And kind of like I already said, the whole 23 point of this is just to get the public involved. So 24 please tell your friends to come, tell people you live near 25 what's going on, and, you know, give us any comments or</p>	<p style="text-align: right;">Page 13</p> <p>1 soil vapor. These four chemicals were carbon 2 tetrachloride, trichloroethene, Freon 113, and 3 1,1-dichloroethene. These chemicals are chemicals that are 4 used as cleaning solvents. When we used to test the old 5 rocket motors here back, as Peter was saying, back in the 6 '30s, '40s, and '50s they used to clean out the rocket 7 motors with these solvents, and that's how they came into 8 the ground here at OU-2. 9 Secondly, I want to talk to you today about 10 the OU-2 risk assessment. The human health risk assessment 11 found that there were no risks above regulatory thresholds 12 from exposure to humans to soils or soil vapor. Now, as 13 Peter mentioned earlier, the main reason is that these 14 chemicals are more than 50 feet below the ground surface 15 where we are today, so it's really very, very unlikely that 16 any of you will come in contact with those chemicals. 17 However, also, as Peter and Mark mentioned, 18 there is a risk that these chemicals will continue to 19 migrate. They've already migrated 50 to 200 feet down, and 20 they will continue to migrate to the groundwater, and that 21 is the purpose of the remedy that we're proposing here. 22 Now, we are currently studying how we're 23 going to remove the VOCs from the groundwater. And, as 24 mentioned earlier, that's going to be the subject of 25 another public meeting almost exactly like this in the near</p>

<p style="text-align: right;">Page 14</p> <p>1 future.</p> <p>2 However, in the meantime, again, to</p> <p>3 reiterate what Peter said, there isn't a risk from the</p> <p>4 chemicals in the groundwater because your water purveyors</p> <p>5 or the individuals who have to deliver the water to you</p> <p>6 have to meet very strict regulatory requirements. But the</p> <p>7 focus of today's meeting is looking at how we can remove</p> <p>8 what we're calling source removal. It is how can we remove</p> <p>9 the chemicals that are in the soil that may potentially</p> <p>10 continue to migrate into the groundwater. And that's what</p> <p>11 we're looking at today.</p> <p>12 Now, this graphic shows the extent to which</p> <p>13 VOCs at any level, whether that was a very, very small</p> <p>14 level or a high level were found at JPL during the remedial</p> <p>15 investigation. Now, to date -- I don't know how many of</p> <p>16 you had a chance to look back at our table back here, but</p> <p>17 the size of this area is smaller to date; and so if you are</p> <p>18 interested, please take a look. But this was during the</p> <p>19 1994 through the 1998 remedial investigation. The highest</p> <p>20 levels -- like I said, this is the extent of all levels</p> <p>21 that we found during our remedial investigation; however,</p> <p>22 the highest levels that we found were here in the north</p> <p>23 central part of the site. And that's where most of the lab</p> <p>24 activities were taking place at the time.</p> <p>25 Now, based on the results of what we did in</p>	<p style="text-align: right;">Page 16</p> <p>1 viable alternatives for cleaning up the site.</p> <p>2 The first is no further action. This is a</p> <p>3 default that is used to compare all other technologies to.</p> <p>4 It would involve maintaining our quarterly soil vapor</p> <p>5 monitoring program and any possible natural degradation of</p> <p>6 the chemicals in the soil and the soil vapors.</p> <p>7 The second is soil vapor extraction with</p> <p>8 granular activated carbon treatment. Now, this technology</p> <p>9 would involve placing up to five soil vapor extraction</p> <p>10 wells and five extraction systems or treatment systems, and</p> <p>11 also continuing the ongoing quarterly soil vapor monitoring</p> <p>12 program here at JPL.</p> <p>13 To help us evaluate the technologies and the</p> <p>14 alternatives, we conducted a pilot study of the soil vapor</p> <p>15 extraction technology at JPL starting in 1998. Again, some</p> <p>16 of the results from our pilot study are available at the</p> <p>17 tables in the back, but what it showed in over 14 months of</p> <p>18 operation, we removed over 200 pounds of these chemicals</p> <p>19 from the soils. Now, it was so effective during our pilot</p> <p>20 study that we do continue to operate the pilot study to</p> <p>21 date, and it does continue to remove the chemicals from the</p> <p>22 soil vapor to date.</p> <p>23 Now, this is a conceptual drawing of how</p> <p>24 soil vapor extraction works. Now, let me point out some of</p> <p>25 the details of this diagram. It's fairly simplified, but</p>
<p style="text-align: right;">Page 15</p> <p>1 the soil investigation and the remedial investigation and</p> <p>2 also our continued quarterly monitoring program for soil</p> <p>3 vapor, we have found that, as I said, the VOC vapor plume</p> <p>4 has not migrated in soil vapor off the site. This is about</p> <p>5 the limit. It's about 45 acres here on the site in soil</p> <p>6 vapor, so it hasn't gotten any bigger than this.</p> <p>7 And, again, I encourage you to take a look</p> <p>8 after the formal presentation at some of the other</p> <p>9 documents we have in the back that would show you some of</p> <p>10 the more current conditions.</p> <p>11 Now, like I said, based on the analysis of</p> <p>12 the remedial -- during the remedial investigation, the</p> <p>13 remedial objective for OU-2 is to prevent VOCs from</p> <p>14 migrating to the groundwater. That's our objective here.</p> <p>15 To meet this objective, we looked at several</p> <p>16 alternatives, and these were investigated in what Mark</p> <p>17 called earlier the feasibility study. Of these</p> <p>18 alternatives, two were selected for a very detailed</p> <p>19 evaluation, as mentioned in the proposed plan that was sent</p> <p>20 out. Others were looked at and, for example, just weren't</p> <p>21 found to be feasible. For example, it would be very</p> <p>22 unfeasible to try to dig out soils underneath all the</p> <p>23 buildings here at JPL where the soils are more than 50 feet</p> <p>24 below the buildings here on-site. So we wanted to look at</p> <p>25 two alternatives in detail that we wanted to make sure were</p>	<p style="text-align: right;">Page 17</p> <p>1 it does give you a good picture of how soil vapor</p> <p>2 extraction works.</p> <p>3 First, here, this is the past seepage pits</p> <p>4 that were used back, as Peter said, back in the '30s and</p> <p>5 '40s that released VOCs into the soil and soil vapor.</p> <p>6 These VOCs are basically -- it's like a vacuum. The soil</p> <p>7 vapor extraction is like a vacuum that sucks these soil</p> <p>8 vapors, the chemicals, into this extraction well, right</p> <p>9 here, and extracts the vapors in a gaseous phase to the</p> <p>10 surface through this little pump. The pump then sends the</p> <p>11 chemicals into the vapor treatment system. Now, the vapor</p> <p>12 treatment system consists of granular activated carbon.</p> <p>13 What it does is -- actually, it's like charcoal. What it</p> <p>14 does is when the vapors with the chemicals go through the</p> <p>15 carbon, they bind to the carbon and they stay permanently</p> <p>16 in the carbon and clean air is released from the system.</p> <p>17 So, basically, all of the chemicals that are sucked from</p> <p>18 the ground through the system remain in the vapor treatment</p> <p>19 system and are permanently removed from the soil vapor.</p> <p>20 So based on our analysis, based on the</p> <p>21 remediation investigation, based on our soil vapor</p> <p>22 extraction pilot study, alternative one was not chosen</p> <p>23 because it just doesn't prevent the migration of VOCs to</p> <p>24 the groundwater. Therefore, the proposed alternative for</p> <p>25 OU-2 is soil vapor extraction. Soil vapor extraction would</p>

<p style="text-align: right;">Page 18</p> <p>1 be used to reduce the source of the chemicals in the soil 2 vapor so that they do not migrate to groundwater. It would 3 permanently remove them from the soil vapor to the system. 4 Soil vapor extraction works very well for 5 several reasons. 6 First, number one, it permanently removes 7 the VOCs from the soil vapor. 8 Number two, it works very well in the types 9 of geology and soil that we have here at JPL, and that was 10 shown during our pilot study. 11 Third, it protects the groundwater from 12 further migration of these chemicals through the soils. 13 Fourth, the treatment period is relatively 14 short, probably from one to five years, operating these 15 types of systems. 16 And, finally, because of these advantages, 17 and because soil vapor extraction has been so successful, 18 not only here in our pilot study, but at sites all over the 19 country, it's given the name "a presumptive remedy" by the 20 United States EPA. What a presumptive remedy is, it's the 21 most effective technology for conditions similar to JPL as 22 was seen at sites tested throughout the country. And 23 that's another main reason why we're proposing soil vapor 24 extraction for OU-2. 25 Based on the pilot study data, based on the</p>	<p style="text-align: right;">Page 20</p> <p>1 alternative, but it's just continuing not to do something. 2 If I'm wrong about that, I'd like to be corrected. 3 And so alternative two is to pursue the soil 4 vapor extraction. And it's interesting. I appreciate the 5 description that was given today. I wonder if some folks 6 from either the Navy or maybe someone -- the fellow from 7 the EPA could tell us more about some other alternatives 8 that were considered for this. 9 Also, my other comment is that I just 10 received the notice, an invitation to this meeting, today, 11 May 12th. And the meeting -- I just received it in the 12 mail today, May 12th, from the post office in my mailbox 13 here in Altadena, and today the meeting is also May 12th. 14 So I'd like to comment that this is not soon enough before 15 the meeting to be able to get people over here and tell 16 people about what an interesting meeting this is. I think 17 that if we would have known about it a little more in 18 advance, it would have helped -- 19 MR. SAUNDERS: Thirty seconds. 20 MS. TUTT: Thank you. 21 -- it would have helped to get more 22 interested community members out to the meeting. So I just 23 wanted to just pass that along. I would think that at 24 least 10 days would be the minimum that you would let us 25 know in advance of the meeting.</p>
<p style="text-align: right;">Page 19</p> <p>1 results of the remedial investigation and ongoing quarterly 2 monitoring, we are proposing soil vapor extraction as the 3 proposed alternative for JPL OU-2. 4 Lee. 5 MR. SAUNDERS: Thank you, Richard. 6 We're now going to go into the comment 7 phase, comment and question phase, of this meeting. As a 8 quick reminder: To ensure that all participants' comments 9 or questions receive equal treatment, please limit your 10 comments and questions to two minutes. We also ask you to 11 please state your first and last name and spell your last 12 name for the court reporters. 13 Thank you. 14 Do we have any speakers that would like to 15 comment or ask any questions? Please step up to the mike. 16 Don't be shy. Any questions or comments that you want to 17 submit to the court reporters in writing? 18 Yes, ma'am. Would you step up to the mike, 19 please. 20 MS. TUTT: My name is Elaine Susan Tutt, and my 21 last name is T- as in Thomas -u-t-t as in Tom. And I'm a 22 resident of Altadena, and I also work here at JPL. 23 Yeah. What I would like to ask is for the 24 alternatives. There's alternative one and alternative two, 25 and it seems like alternative one is not really an</p>	<p style="text-align: right;">Page 21</p> <p>1 Thank you. 2 MR. RIPPERDA: I'll say something from the EPA's 3 perspective on your question on alternatives, and I also 4 agree with you about the short notice. That's inexcusable 5 on our part, on NASA's part. You know, I'm not sure why it 6 happened that way. It wasn't supposed to. These things 7 were supposed to be mailed out about 10 days ago. So we 8 screwed up, and I have to take responsibility for that, 9 too, because I'm supposed to be overseeing what NASA's 10 doing to make sure they do it right. 11 But back to the alternatives. 12 It does look like, you know, NASA is not 13 giving anybody very much choice. They're giving you 14 alternative one and alternative two, and alternative one is 15 essentially do nothing. But in a -- we talked about this, 16 actually, before the meeting, saying, "Wow, you know, we're 17 not giving people much choice here." But it's what Richard 18 said about a presumptive remedy. 19 In a case like this, soil vapor extraction 20 has been used at thousands of sites around the country. 21 It's been the one and only technology that's proven to work 22 consistently at sites like this. 23 You know, there are other things you can 24 do. You can dig up the whole site, but EPA doesn't require 25 a facility to investigate, you know, obviously ridiculous</p>

<p style="text-align: right;">Page 22</p> <p>1 choices such as digging up the entire site. 2 But there's other things you can do like 3 injecting steam to make it be cleaned up faster. That 4 would be called an innovative technology. But we don't 5 really require that a facility look at things like that 6 that would cost so much more when an off-the-shelf 7 technology works so well and relatively quickly. 8 So even though it looks like there's really 9 not much choice here, it's because NASA is following the 10 process that's kind of set in law by Congress that they're 11 supposed to look at alternatives, but we've been doing this 12 long enough that the alternatives that it boils down to in 13 some cases are very few, or, in this case, only one real 14 alternative. 15 Congress makes us look at "no further 16 action" just as a baseline to make sure we're not out there 17 spending money willy-nilly. And other than that, the way 18 the law was written by Congress, you know, we're supposed 19 to look at viable alternatives. And, in this case, we have 20 enough experience to know that soil vapor extraction is 21 actually the only viable alternative. But we're still 22 supposed to do it in this way where we go to the public 23 with our various alternatives that NASA is proposing. We 24 haven't changed the process even though we've learned 25 enough to know that there actually is only one real</p>	<p style="text-align: right;">Page 24</p> <p>1 We have meetings quarterly, and we will 2 discuss this, and we will have information meetings in the 3 future because we still need your inputs. So as we go on, 4 hopefully we'll find some technology with the silver bullet 5 that will clean everything up, we hope, some day. But 6 until now we have to use what we've got. 7 MR. ZUROMSKI: I just want to make two quick 8 comments just to clarify what Peter said, as well. 9 It's true that every five years we do what 10 is called a five-year review once we sign the legal 11 document that Mark talked about called the ROD, the record 12 of decision. So every five years, we do review what we've 13 done and, again, see if we're doing the right thing. 14 And, secondly, as I think was mentioned 15 today, this is the proposed alternative, as well. The 16 opportunity here is that we are presenting, though limited, 17 but what we think is the best alternative. We do encourage 18 your comments as to what you think, if this is the best 19 alternative. And that's why this part of the process 20 involves public comment. 21 So thank you. 22 MR. SAUNDERS: Any other comments? 23 MR. ROBLES: Just a couple of comments I wanted to 24 make was we did mail these out on Tuesday, May 8th. 25 Obviously, it wasn't enough time, so we'll definitely make</p>
<p style="text-align: right;">Page 23</p> <p>1 alternative here. 2 So I don't know if NASA wants to say 3 anything. 4 MR. ROBLES: Just because it's SVE now doesn't mean 5 that if, in the future, new technology comes in that we 6 find better that we won't revisit this. This is not like 7 cast in stone right now. So I want to assure the public 8 that as technologies develop, we are required through the 9 process to periodically review what we're doing, and if we 10 see something better, and if an issue comes up that we want 11 to augment the SVE with another technology that has 12 appeared to be better, that's what we do. 13 So as the technology improves, one of the 14 things -- I've been in this business 30 years. One of the 15 things that amazes me is that the regulations are always 16 set forth before the technology catches up. But as 17 technology improves, we in the environmental community can 18 say, "Okay, look, this new technology might be better than 19 be SVE, so let's replace it or let's augment." 20 So don't think that this is it. We're only 21 going to do SVE, and that's it; we've lost the 22 opportunity. We are required through the process, and Mark 23 is always on my case about this, is to make sure that the 24 technology matches what we need to do. And so we're going 25 to revisit this. It's not cast in stone.</p>	<p style="text-align: right;">Page 25</p> <p>1 sure that we mail these farther in advance to get them out 2 to you in plenty of time to plan to attend the meeting. 3 And one other comment, as Richard was 4 basically saying, is the purpose of this meeting is that 5 you can come here and provide some alternatives that you 6 feel might be useful to add into the record that we could 7 consider in the future. 8 Are there any other comments or questions 9 from the public? 10 MS. BLAIR: I have one, yes. 11 My name is Susan Blair, B-l-a-i-r. I'm also 12 an Altadena resident. Mine's a curiosity question. Once 13 the gasses come up through the pipe into the chamber where 14 the carbon is and it absorbs the chemical, what happens to 15 those carbons? 16 MR. ZUROMSKI: What happens is once the carbon 17 becomes full of all the different chemicals that we are 18 pulling from the soil vapors, we have to, as Peter stated 19 earlier, in accordance with all the state and local and 20 federal regulatory requirements, take that carbon canister, 21 remove it, and then it's either recycled or incinerated or 22 somehow disposed of in a very legal manner off-site. And 23 then we then replace the carbon with brand-new carbon and 24 it continues the process again. 25 MS. BLAIR: Thank you.</p>

<p style="text-align: right;">Page 26</p> <p>1 MR. SAUNDERS: Do we have any other questions from 2 the public? 3 Go ahead, ma'am. 4 MS. COMPTON: Cynthia Compton, C-o-m-p-t-o-n. I'm 5 an employee of JPL and interested community member. I have 6 a few questions, so I'll just plow through them in my two 7 minutes. 8 You said that in the '50s to the early '60s, 9 a sewer system replaced the seepage pits. Does that mean 10 the chemicals are now going into the sewer system, and 11 where do they go from there? 12 Other questions I have are: Is there a 13 record of what other alternatives were considered other 14 than these one and two, and where can we read or find out 15 about that? 16 And it says the pilot system has removed 200 17 pounds of VOCs. Out of how many is predicted or known to 18 be at the site? 19 It says that -- I think what I'm hearing is 20 that the VOCs are in the vapor or the pockets of the soil, 21 so what about the soil itself, involving the VOCs in the 22 soil particles, and once you remove it from the vapor, does 23 it now migrate from the soil particles back into the vapors 24 afterwards? 25 And I also agree with the short notice to</p>	<p style="text-align: right;">Page 28</p> <p>1 saying, "This is a storm water drain. This is sanitary 2 sewer." We don't want chemicals going down there. That's 3 part of our regulation. We have a whole office on-site to 4 manage that. So that's not going down there. That's one 5 of the reasons. 6 The second -- well, I'll answer your last 7 item on the notices. There are repositories in the local 8 area, the libraries, that you can get these documents, and 9 there is on the record when we sent the notice. We do 10 apologize. We had a little snafu. We had sent 4,732 11 mailers. Now, I have received some phone calls that people 12 did receive them by Monday and Tuesday of this week, but 13 there was a slight mix-up where you might have been the 14 ones that didn't get it until later. We did send the 15 E-mail out -- I don't know what happened. Well, we want to 16 send it earlier, so that's a good comment. We're going to 17 have to notice -- I think we're going to really have to 18 send them more than 10 days earlier to make sure that the 19 mail -- because there were some problems with some of the 20 post offices in sending this stuff out, so we want to make 21 sure it does. 22 We also put it in the paper. We put it in 23 the four local papers and "L.A. Times." But I also notice 24 that some people didn't see that, so we have to agument in 25 the future -- so we have to be creative about which way --</p>
<p style="text-align: right;">Page 27</p> <p>1 the public, and that's why there are -- in my opinion, are 2 not adequate representation from the community here. I got 3 the E-mail notice on Wednesday, and didn't really see it 4 until Friday, about six P.M. on Friday. And I would like 5 to know: Is there some kind of record of when notices are 6 sent out to the public and where they're at? 7 And the other thing is, I think I was 8 talking to Richard about who these notices are sent to in a 9 half-a-mile radius from the site. What about -- I 10 understand sending it another half a mile to get more 11 public is maybe too many -- you know, too costly, but what 12 about sending the notice to the customers of the water 13 companies that are involved? 14 MR. SAUNDERS: Time. Thank you. 15 Your questions are involved, and we'll 16 address them one at a time. 17 MR. ROBLES: Good questions. 18 On the first one is we do not send chemicals 19 down the sewer system. What happens is we try to recycle 20 them. They're usually used up in the processes. If we 21 can't recycle them, we try to destroy them in some form or 22 fashion. The regulations try to minimize sending stuff 23 down the sanitary sewer. Very particular about that. 24 I don't know if you've seen around the lab 25 these circles with the ducks on them because they're</p>	<p style="text-align: right;">Page 29</p> <p>1 do you guys listen to radio? Might that be a better way? 2 I'm just asking because we're trying to get more items out, 3 and that's why we have two meetings. So if you could tell 4 the public, you know, I apologize, come out Monday. I 5 would love to see a hundred people here or more. But we 6 have sent 4,732 of these mailers plus the 6,000 JPLers who 7 were contacted. 8 MR. ZUROMSKI: I think I'm going to address the 9 other two of them. I think Peter covered a lot of yours. 10 The first, if you do want to see the other 11 types of technologies that were evaluated, that is in the 12 feasibility study and that is available at all of the 13 document repositories. And that shows you the detailed 14 analysis, like I talked to you about earlier, that we go 15 through to evaluate technologies. It will show when 16 certain things were dropped out and when certain things 17 were retained. And it's very detailed. It's about three, 18 four inches thick, but it's very easy to look at. So feel 19 free; it's at all the document repositories. 20 The second question I think that I'm going 21 to answer is the amount of chemicals that are in the soil 22 vapor and how they move around. 23 There are different ways to technically 24 estimate how much is in the soil vapor. I can't get into 25 every little detail of how that is done. Again, that is in</p>

<p style="text-align: right;">Page 30</p> <p>1 the feasibility study, as well. But there is an estimate 2 of somewhere between three to five thousand pounds, 5,000 3 being the maximum that we believe could be in the soil 4 vapors, and that also includes what would be in the soils. 5 When we say "soil vapors," since they are 6 volatile organic compounds, they tend to be in a vapor 7 state, and so that is why we are removing soil vapors, 8 versus soils themselves. 9 MR. RIPPERDA: I'll add a little bit to that. 10 That's actually a great question about soil vapor versus 11 soil, and what Richard said is right, but I'm just going to 12 add a little bit. 13 So we estimate, or NASA estimates, that 14 there's up to about 5,000 pounds total of these things, and 15 that's total in the soils, absorbed in the soils and in the 16 soil vapor. When it's located like it is, 50 to 200 feet 17 below the surface, you actually have to drill a well, a 18 bore hole, to get down to it. And the act of drilling that 19 bore and taking your sample, you can't -- it drives the 20 VOCs out of that piece of soil. So you can't just take a 21 sample of the soil and analyze how much in the soil. It's 22 just not very effective. 23 So what we do instead is we measure what's 24 in the soil vapor, and that's very easy. You drill your 25 same bore hole, and that sucks some air in, and that</p>	<p style="text-align: right;">Page 32</p> <p>1 want it to volatilize that material because it's a volatile 2 organic. So you want to draw it out. So you constantly 3 are pulling pressure and putting a vacuum on it to suck it 4 up. Eventually there should be no particles left there. 5 I'd say no because any system cannot be 100 6 percent clean. You can't get the last molecule out. What 7 you're trying to do is get as low as possible until the 8 technology doesn't work anymore, and then you wait for 9 another technology. You say, "Hey, we're kind of finished, 10 and there is no more threat to the groundwater." And 11 that's what you do on that. It's not an exact science. We 12 try our best, and that's what we do. 13 And that, like I said -- the document, as 14 Richard said, is thick. It has everything in there that 15 you want to know, and if it's not in there, we'll have 16 informative meetings and we can give you the boring 17 lecture. Because this is long and to read these documents 18 right now at -- once we finish this process, sometime in 19 the future, we're going to have so many documents that you 20 will not believe. I mean, we generate so much information. 21 This process requires of the government to do this to make 22 sure that we make the right decision, and we have to 23 publish these documents so you the public can read them and 24 say, "How did you guys make that choice?" That's what we 25 call the administrative record, and that's why we have that</p>
<p style="text-align: right;">Page 31</p> <p>1 volatilizes it off the soil. So we're being somewhat 2 legalistic when we're always saying the VOCs in the soil 3 vapor because that's where we actually measured it, and 4 that represents how much is actually in the soil. And 5 there are various equations that you can use based on soil 6 chemistry with partitioning co-efficients and so forth to 7 calculate from what you have in the soil vapor back to what 8 you have in the soil. 9 So just because we always say "soil vapor," 10 that doesn't mean we're only looking at the vapor. What we 11 really care about is what is in the soil and about any 12 rainwater that might migrate through that soil, deabsorb 13 it, and carry it down to groundwater. 14 MR. SAUNDERS: Any other feedback from any other 15 representatives? 16 MR. ROBLES: Did we answer all your questions, 17 ma'am? 18 MS. TUTT: What about when you remove the VOCs from 19 the vapors, as more chemicals evaporate out of the soil 20 into the -- 21 MR. ROBLES: Right. That's why you constantly do 22 that. The question is -- one question that she had asked, 23 once you remove the particles through the vapor, are there 24 any particles left on the soil? 25 This is a continuous process because you</p>	<p style="text-align: right;">Page 33</p> <p>1 in the repositories for you. 2 MR. SAUNDERS: I don't know if it was mentioned, 3 the proposed plan information repositories are located on, 4 if you want that information, on page six of this, the 5 different information repositories. The item of record, I 6 believe, is kept here at JPL. 7 MR. ROBLES: There's three. 8 MR. SAUNDERS: Okay. And, again, what you're 9 telling us tonight is very useful this evening because we 10 need this feedback. I believe this is the first time that 11 you've held a public meeting here, so this is a learning 12 process for NASA, for all of us. And we appreciate this 13 feedback that you're giving to us. It will help us make 14 the meetings better in the future, to communicate 15 information to the public better. 16 Yes, ma'am. 17 MS. TUTT: The only question that wasn't answered 18 is: Have you considered sending these public notices to 19 the customers and the water companies that are impacted? 20 MR. ROBLES: Thank you. We have a representative 21 here. I'm not going to put him on the spot. 22 We meet with the Raymond Basin Management 23 Board. We have dialogue. We are meeting with the City of 24 Pasadena on Monday. The water purveyors know about these 25 meetings, and we have told them in their board meetings and</p>

<p style="text-align: right;">Page 34</p> <p>1 the word has gotten out that way. We have gone to local 2 community meetings like, I think, Northeast Trees and a few 3 others. We've told them about this.</p> <p>4 We are looking to expand our mailing list, 5 so if you can recommend some groups or people that you want 6 to put on the mailing list, please let us know because we 7 have no fear of sending as many as it takes so that the 8 public -- normally, believe it or not, I've been in this 9 business 30 years, and I've only been at one public meeting 10 where it was standing room only and that was because the 11 government needed to expand a bombing range. You know how 12 controversial that was. But most of the time people get 13 their information through the newsletter or they call up or 14 they go to the repositories. But if you have any 15 suggestions of people that you want on the mailing list or 16 groups, please let us know. But this information has 17 gotten out to the purveyors of water.</p> <p>18 MR. SAUNDERS: I believe what you're referring to 19 is like when --</p> <p>20 MR. ROBLES: Oh, the customers? You mean the water 21 customers?</p> <p>22 MS. TUTT: You and me that are drinking water and 23 paying the purveyor to send water to our houses.</p> <p>24 MR. ROBLES: So you're asking should we send this 25 to all the people who get the water?</p>	<p style="text-align: right;">Page 36</p> <p>1 Particularly when we're talking about groundwater. Good 2 suggestion.</p> <p>3 MR. SAUNDERS: Did we answer all your questions? 4 Was there anything else that we skipped over?</p> <p>5 MS. TUTT: Record of public notices, is that in the 6 repositories or only here at JPL?</p> <p>7 MR. SAUNDERS: That type of information is put in 8 the information repository. Public notice for the meeting 9 would be put in there.</p> <p>10 Any other questions or comments from the 11 public? We welcome this opportunity to hear from you. 12 Anyone else?</p> <p>13 Well, there is another opportunity if you 14 think of further questions that you'd like to ask. We are 15 having another public meeting on Monday night, and that 16 information is also in that proposed plan fact sheet and 17 the times. And the public comment period is continuing 18 on.</p> <p>19 Again, I want to thank you for attending. I 20 encourage you to review and comment on the proposed plan. 21 Final decisions regarding cleanup will be made after your 22 public comments have been received and considered.</p> <p>23 The public comment period started on May 7th 24 and runs through June 11th, 2001. If requested, NASA may 25 consider extending the public comment period. Written</p>
<p style="text-align: right;">Page 35</p> <p>1 MS. TUTT: All the customers who live within a 2 half-mile radius.</p> <p>3 MR. ROBLES: That's a good point.</p> <p>4 MR. SAUNDERS: I think the point you may also be 5 making, and I may be wrong about this, but when utilities, 6 they have public hearings and such, they usually include a 7 public notice in their mail-out in the billing. Of course, 8 that is their mailing; it's not ours. So we would have to 9 approach a utility to do that. Whether they would do it 10 for free or charge us, I don't know, but that's something 11 we would have to discuss with the utility.</p> <p>12 UNIDENTIFIED SPEAKER: That's a community right to 13 know.</p> <p>14 MR. ROBLES: Right. That's a community right to 15 know.</p> <p>16 That's a very good suggestion that when 17 we're going to talk about groundwater, a good thing to do 18 might be to go and talk to the purveyors and see if we 19 should send those notice -- that's a good point. Thank 20 you.</p> <p>21 MRS. BLAIR: The Lincoln Avenue Water Company, 22 every member of the Lincoln Avenue Water Company is a 23 shareholder, so they have the right to know that.</p> <p>24 MR. ROBLES: That's right. That's a good point. 25 Thank you. I didn't think about that. That's good.</p>	<p style="text-align: right;">Page 37</p> <p>1 comments, and request for extension of the comment period 2 should be mailed or E-mailed to Peter Robles, and his 3 address is in the fact sheet, and it's also up here on the 4 slide here.</p> <p>5 If there's nothing else, no other comments, 6 any last statements from our representatives up here, I 7 thank you for attending this afternoon and have a good 8 evening.</p> <p>9 Oh, yes. And there will continue to be the 10 representatives here who will be available after the 11 meeting if you want to do follow-ups or ask any further 12 questions. And, again, if you think of a question after 13 we've officially closed this meeting, feel free to write it 14 out on the comment sheet and submit it to our court 15 reporters and such so they can include it in the public 16 record.</p> <p>17 Thank you.</p> <p>18 (Whereupon, at 4:00 P.M., the HEARING was 19 adjourned.) 20 ---000--- 21 22 23 24 25</p>

1 STATE OF CALIFORNIA)
2) ss
3 COUNTY OF LOS ANGELES)
4 I, Vickie Blair, Certified Shorthand Reporter,
5 number 8940, RPR-CRR, for the State of California, do
6 hereby certify;
7 That the foregoing transcript is a true record
8 of the proceedings.
9 I hereby certify that I am not interested in
10 the event of the action.
11 IN WITNESS WHEREOF, I have subscribed my name
12 this 4th day of June, 2001.
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PUBLIC MEETING AND PUBLIC COMMENT PERIOD
SATURDAY, MAY 12, 2001
1:00 P.M.

VON KARMAN AUDITORIUM
NASA JET PROPULSION LABORATORY
4800 OAK GROVE DRIVE
PASADENA, CALIFORNIA

<p style="text-align: right;">Page 2</p> <p>1 PASADENA, CALIFORNIA 2 SATURDAY, MAY 12, 2001; 1:00 P.M. 3 4 MR. SAUNDERS: Good afternoon. 5 Welcome to the Jet Propulsion Laboratory. Thank you 6 for taking the time to attend this meeting on a 7 Saturday afternoon. 8 My name is Lee Saunders. I'm an 9 environmental public affairs officer for the U.S. 10 Navy and your facilitator for today's meeting about 11 the proposed plan to select a remedy to clean up 12 soils at the National Aeronautics and Space 13 Administration Jet Propulsion Laboratory, located 14 here in Pasadena. 15 Prior to this meeting you had the 16 opportunity speak to NASA, federal and other local 17 regulatory agency representatives on a one-on-one 18 basis about the proposed cleanup actions. During 19 this portion of the meeting you, the community, can 20 provide questions and comments to these 21 representatives and their agencies on the proposed 22 plan. These comments and questions will be included 23 in a meeting transcript and become part of the final 24 decision made for soil cleanup at JPL. 25 Representing the agencies responsible</p>	<p style="text-align: right;">Page 4</p> <p>1 I'm going to ask you to please hold 2 your questions until the presentations have been 3 completed. Once we've heard from all the presenters 4 we will open the floor for questions and comments. 5 You may want to use the sheets of paper that were 6 distributed, comments sheets, to write down your 7 questions during the presentation, in case you have 8 some questions that you develop and you just feel 9 you can't wait until the time comes, but that will 10 help you keep track of what those questions are. 11 To ensure that everyone that wishes to 12 make a comment or ask a question has a fair and 13 equal opportunity do so, we ask that you limit your 14 comments or questions to two minutes. At the end of 15 that time please take your seat. If you have not 16 finished your remarks, you may continue for another 17 three-minute period after we've heard from all the 18 other speakers. 19 We have a court reporter -- actually, 20 we have two court reporters here today, so we ask 21 you to please state your first and last name and 22 spell your last name before you begin your comments 23 or questions. 24 If you do not wish to provide verbal 25 comments or questions, you may also submit your</p>
<p style="text-align: right;">Page 3</p> <p>1 for the cleanup and talking to you about the 2 proposed plan and its remedial alternatives are 3 agency representatives, who will each introduce 4 themselves, starting from my left here. 5 MR. ROBLES: Peter Robles from NASA. 6 MR. ZUROMSKI: Richard Zuromski from 7 the Naval Facilities Engineering Command. 8 MR. GEBERT: Richard Gebert from the 9 state of California Department of Toxic Substance 10 Control. 11 MR. RIPPERDA: Mark Ripperda from the 12 U.S. EPA. 13 MR. YOUNG: David Young from the 14 Los Angeles Regional Water Quality Control Board. 15 MR. SAUNDERS: And all these 16 representatives are what we call remedial project 17 managers that are responsible in one way or form in 18 the cleanup of this particular site. 19 Ground rules, I want to talk about 20 ground rules for today's meeting, are as follows: 21 This afternoon's format will consist of 22 presentations by our representatives about the 23 proposed plan and remedial alternatives, followed by 24 a formal comment session where you, the community, 25 can provide us with your comments and questions.</p>	<p style="text-align: right;">Page 5</p> <p>1 comments and questions in writing. There are 2 comments sheets, as I just mentioned a moment ago, 3 available on the tables in the back for those of you 4 in the audience that would prefer not to give your 5 input or comments verbally at this meeting. 6 For those of you wondering why the 7 U.S. Navy is involved with the environmental cleanup 8 of a NASA facility, the explanation is fairly 9 simple. In 1999 NASA and the Naval Facilities 10 Engineering Command, who I work for, more commonly 11 known by the acronym NAVFEC, reached a memorandum of 12 agreement establishing roles and responsibilities 13 that state that NASA may procure environmental 14 engineering and consultancy services from NAVFEC and 15 its subordinate commands. In late 1999 NAVFEC 16 became heavily involved in providing environmental 17 services to NASA JPL. 18 Peter Robles, remedial project manager 19 from NASA, is our first presenter. 20 Peter? 21 MR. ROBLES: Good afternoon. First 22 thing we want to talk about is our presentation. 23 What we have -- going to present this afternoon is a 24 site description, regulatory framework, site 25 assessment and investigative activities and our</p>

<p style="text-align: right;">Page 6</p> <p>1 remedial activity and proposed remediation 2 alternatives. In other words, we're going to go and 3 follow along what the booths in the back are, in 4 sequence, so that you can get a feel for the total 5 history of this site. 6 Site description. The site has been 7 active since the late '30s to early '40s. It was 8 part of a project out of Cal Tech. The Army 9 ordinance took over the site in the '40s and became 10 the owner of the site and work was done here for the 11 Army ordinance service, particularly during the 12 World War II era. 13 At that time during the '40s and '50s, 14 the proper and acceptable way of disposing of 15 chemicals was done through what we call seepage 16 pits. Seepage pits are no more than bricks without 17 the binding between them, so that things can seep 18 out into the ground through them. At that time it 19 was accepted. Most of that was working on 20 propulsion systems to support jet aircraft, we call 21 JATO, genesis to take-off rockets, also reverse 22 engineering of V-II rockets for World War II and 23 further on. 24 During the late '50s, early '60s the 25 Army ordinance was working and negotiating with NASA</p>	<p style="text-align: right;">Page 8</p> <p>1 remediate. 2 Here is the site description of what 3 we're talking about and here is the gist of the 4 problem. Because of the seepage pits and the stuff 5 that was put in there, they slowly, and it takes 6 years to migrate through the soils and to reach the 7 water table. 8 Our biggest concern is between 50 feet 9 below the surface all the way down to 200 feet, and 10 the main purpose of our discussion today is to talk 11 about remediating what we call Operable Unit 2 12 vadose zone. Vadose zone is an engineering term for 13 just the soils between the surface to the water 14 table. 15 We want to remove this source, so that 16 it stops migrating and impacting the environment. 17 And that's what our focus is today about, minimizing 18 that, removing that and we have certain technologies 19 that we have tried. 20 NASA will address the groundwater 21 issue. In the future we plan another meeting like 22 this next year, to talk about remediating 23 groundwater Operable Unit 1 and 3, but today we want 24 to focus on the soils. 25 And now I would like to turn this over</p>
<p style="text-align: right;">Page 7</p> <p>1 and NASA took over the site in 1959, 1960, at which 2 time what we did was we replaced the seepage pits 3 with a sewer system so, therefore, we could stop 4 that type of activity. Up until that time there was 5 not a problem with the ground or soils in the area, 6 but in '92 was when the concern came about and we 7 were placed on the national priorities list by EPA. 8 And at that time that made us a 9 Superfund site, which is what the process that we 10 have been talking about these last couple of hours 11 with you. That process started in October of '92, 12 we signed a federal facility agreement and the 13 process started for us to investigate the site. 14 Current activities right now is that 15 all of our operations meet federal and state and 16 local regulations. And by the way, I was told by 17 our people to say this, that almost all, very small 18 percentile is ever sent through disposal. We 19 recycle and destroy as much as we can. The effect 20 is, this facility is the best in NASA for recycling 21 materials and chemicals that are used here. And we 22 do a lot of research here but we meet all federal, 23 state and local requirements so current operations 24 is not a concern. We're talking about past 25 acceptable practices that we are trying to</p>	<p style="text-align: right;">Page 9</p> <p>1 to our regulatory framework speaker, which is ... 2 MR. RIPPERDA: Thanks, Peter. 3 I'm Mark Ripperda from EPA and I'm 4 kind of speaking for all the regulators, for Richard 5 and David who are here from the state of 6 California. 7 But first I would just like to ask 8 that all of you from the public go home, tell your 9 friends -- tell 10 friends each how fun this is, how 10 much you learned and tell them that they have to 11 come back on Monday night. 12 So what does it mean to be a Superfund 13 site and, for that matter, what's Superfund. 14 Congress, about 20 years ago, passed a law that put 15 a tax on the chemical industry, and that money from 16 the chemical industry all went into a trust fund 17 that's called the Superfund, that EPA is authorized 18 to use to spend to clean up abandoned hazardous 19 waste sites. That same law also gave EPA the 20 authority to go after existing facilities, such as 21 NASA JPL, that have had releases that need to be 22 cleaned up. 23 But before you become a Superfund site 24 you have to go through a ranking process. EPA 25 evaluates how bad the site is, how bad the potential</p>

<p style="text-align: right;">Page 10</p> <p>1 risk might be and, if you score high enough, you're 2 put on the national priorities list, which that 3 means you're a Superfund site. And right now 4 there's about 2000 or so Superfund sites. 5 So after the discovery of the release, 6 and for NASA JPL that meant that the city of 7 Pasadena found chemicals in their drinking water 8 wells -- I'm not sure which way is east or west 9 here -- over this way, right across the arroyo, the 10 city of Pasadena has some drinking water wells, and 11 they found levels of chemicals in there that were 12 high enough that they needed to be -- to put a 13 treatment system on them. At that time all that 14 information -- started at EPA, we rank it and we say 15 okay, this needs to be a Superfund site. 16 But the first thing that happened is, 17 that as soon as the city of Pasadena found those 18 chemicals they put treatment systems in, NASA had to 19 reimburse the city for that, and then NASA needs to 20 start looking at their site and say -- and determine 21 where those chemicals came from, how much there 22 might be and how best to clean it up so that the 23 groundwater in the future is not getting either more 24 contaminated -- and in fact we can start to clean up 25 the groundwater itself.</p>	<p style="text-align: right;">Page 12</p> <p>1 all those comments. They'll do a written response 2 that gets sent out to the public, it gets sent to 3 the regulators, state of California people and, you 4 know, we at EPA review NASA's response and say 5 either yeah, you did a good job responding or not. 6 And if everybody agrees that, you 7 know, this is the best way to go, then they'll do an 8 actual legal document, called a record of decision, 9 where they say this is what we're selecting to do 10 and then, from there, they actually design the 11 system. Right now they have a rough idea, you 12 know -- if you've been talking to us back there, you 13 know that they're planning to put in about five bore 14 holes. And that's not set in stone, that's, you 15 know, an estimation of what we think will be best. 16 Actual -- after public comments are 17 received and the record of decision is signed, then 18 there are contractors who will do a more detailed 19 study, and it will probably be about five bore 20 holes, plus or minus a little bit, but they'll do 21 the actual details of the design. And after the 22 soils are cleaned up, there will still be long-term 23 monitoring to make sure that the remedy actually 24 worked. 25 And all of this is separate than the</p>
<p style="text-align: right;">Page 11</p> <p>1 So to do that, we do what's called a 2 remedial investigation and feasibility study. That 3 means we look through all the records, what kind of 4 chemicals are used on-site, drill -- NASA drilled 5 bore holes all over the site, they drilled 6 monitoring wells that gets down to the groundwater 7 both on site and off site, they sampled drinking 8 water wells from all over the area to try to 9 determine the extent of the problem and to design a 10 way to best clean it up. And that brings us to 11 about where we are now, for the vadose zone soil. 12 So NASA JPL completed the 13 investigation of the soil zone and they're making a 14 proposed plan to you, to the public, saying that, 15 you know, we think we understand the problem, we 16 think we know the best way to clean it up and what 17 do you think? Both what do you think of what we've 18 done and what do you think of what we, NASA, not the 19 EPA, is saying on how to clean it up. 20 You know, so if you do have any -- not 21 just questions, but if you have any comments on what 22 they're proposing, you know, please make those 23 either today or, after the meeting, in writing. You 24 know, let NASA know what you think. 25 At that point NASA needs to respond to</p>	<p style="text-align: right;">Page 13</p> <p>1 groundwater system which, as Peter said, will be 2 addressed in -- in six months to a year there will 3 be another meeting, with another proposed plan on 4 how NASA plans to clean up the groundwater. 5 And -- kind of like I already said, 6 the whole point of this is just to get the public 7 involved. So please tell your friends to come, tell 8 people you live near what's going on and, you know, 9 give us any comments or concerns you might have. 10 MR. ZUROMSKI: Tell them about the 11 cookies. 12 MR. RIPPERDA: And eat the tablefull 13 of cookies. 14 MR. ZUROMSKI: Thank you, Mark. 15 I think I talked to some of you. My 16 name is Richard Zuromski, with the Naval Facilities 17 Engineering Command, and I'm here today to talk to 18 you about the site assessment and investigation 19 activities that have been done here at JPL and, 20 also, what we're proposing as a remedy for JPL 21 OU-2. 22 First I'll start out with the remedial 23 investigation. From 1994 through 1998 JPL conducted 24 a remedial investigation in over nine sampling 25 events, different sampling events. They looked at</p>

<p style="text-align: right;">Page 14</p> <p>1 45 soil vapor wells, 35 soil borings and three test 2 pits. Now, they also, at the end of that remedial 3 investigation, established 37 permanent monitoring 4 points for soil vapor, that we monitor on a 5 quarterly basis. So we are continuing to monitor 6 the extent of VOCs in the soil to date, on a 7 quarterly basis.</p> <p>8 The samples that we took during the 9 remedial investigation identify the extent to which 10 the chemicals were found in the soils. The results 11 showed that there were elevated levels of four 12 different chemicals in the soil vapor. These four 13 chemicals were carbon tetrachloride, 14 trichloroethene, Freon 113 and 15 1,2-dichloroethylene. These chemicals are chemicals 16 that are used as cleaning solvents when they used to 17 test the old rocket motors here, back -- as Peter 18 was saying, back in the '30s, '40s and '50s they 19 used to clean out the rocket motors with these 20 solvents, and that's how they came into the ground 21 here OU-2.</p> <p>22 Secondly, I want to talk to you today 23 about the OU-2 risk assessment. The human health 24 risk assessment found that there were no risks above 25 regulatory thresholds from exposure to humans to</p>	<p style="text-align: right;">Page 16</p> <p>1 how can we remove the chemicals that are in the soil 2 that may potentially continue to migrate into the 3 groundwater, and that's what we're looking at 4 today.</p> <p>5 Now, this graphic shows the extent to 6 which VOCs at any level, whether that was a very, 7 very small level or a high level, were found at JPL 8 during the remedial investigation. Now, to date, I 9 don't know how many of you had a chance to look back 10 at our table back here, but the size of this area is 11 smaller to date. And so if you are interested, 12 please, take a look. But this was during the 1994 13 through the 1998 remedial investigation.</p> <p>14 The highest levels -- like I said, 15 this is the extent of all levels that we have -- we 16 found during our remedial investigation. However, 17 the highest levels that we found were here, in the 18 north central part of the site. That's where most 19 of the lab activities were taking place at the 20 time.</p> <p>21 Now, based on the results of what we 22 did in the soil investigation and the remedial 23 investigation, and also our continued quarterly 24 monitoring program for soil vapor, we have found 25 that, as I said, the VOC vapor plume has not</p>
<p style="text-align: right;">Page 15</p> <p>1 soils or soil vapor. Now as Peter mentioned 2 earlier, the main reason is that these chemicals are 3 more than 50 feet below the ground surface, where we 4 are today. So it's really very, very unlikely that 5 any of you will come in contact with those 6 chemicals.</p> <p>7 However, also as Peter and Mark 8 mentioned, there is a risk that these chemicals will 9 continue to migrate, they've already migrated 50 to 10 200 feet down and will continue to migrate to the 11 groundwater, and that is the purpose of the remedy 12 that we're proposing here.</p> <p>13 Now, we are currently studying how 14 we're going to remove the VOCs from the groundwater 15 and, as mentioned earlier, that is going to be the 16 subject of another public meeting, almost exactly 17 like this, in the near future. However, in the 18 meantime, again to reiterate what Peter said, there 19 isn't a risk from the chemicals in the groundwater 20 because your water purveyors, or the individuals who 21 have to deliver the water to you, have to meet very 22 strict regulatory requirements.</p> <p>23 But today's -- the focus of today's 24 meeting is looking at how we're going to remove what 25 we're calling -- we're calling source removal, is</p>	<p style="text-align: right;">Page 17</p> <p>1 migrated in soil vapor off the site. This is about 2 the limit, it's about 45 acres here on the site in 3 soil vapor. So it hasn't gotten any bigger than 4 this.</p> <p>5 And, again, I encourage you to take a 6 look, after the formal presentation, at some of the 7 other documents that we have in the back, which will 8 show you some of the more current conditions.</p> <p>9 Now, like I said, based on the 10 analysis of the remedial -- during the remedial 11 investigation, the remedial objective for OU-2 is to 12 prevent VOCs from migrating to the groundwater. 13 That's our objective here. To meet this objective, 14 we looked at several alternatives and these were 15 investigated, what is called -- what Mark called 16 earlier the feasibility study. Of these 17 alternatives, two were selected for a very detailed 18 evaluation, as mentioned in the proposed plan that 19 was sent out. Others were looked at and, for 20 example -- but just weren't found to be feasible. 21 For example, it would be very infeasible to try to 22 dig out soils underneath all the buildings here at 23 JPL that are more than -- that the soils are more 24 than 50 feet below the buildings here on site. So 25 we wanted to look at two alternatives that were --</p>

<p style="text-align: right;">Page 18</p> <p>1 in detail, that we wanted to make sure were viable 2 alternatives for cleaning up the site. 3 The first is no further action. This 4 is a default that is used to compare all other 5 technologies to. It would involve maintaining our 6 quarterly soil vapor monitoring program and any 7 possible natural degradation of the chemicals in the 8 soil -- in the soil vapors. 9 The second is soil vapor extraction 10 with granular activated carbon treatment. Now, this 11 technology would involve installing you to five soil 12 vapor extraction wells and five extraction systems 13 or treatment systems, and also continuing the 14 ongoing quarterly soil vapor monitoring program here 15 at JPL. 16 To help us evaluate the technologies 17 and the alternatives, we conducted a pilot study of 18 the soil vapor extraction technology at JPL, 19 starting in 1998. Again, some of the results from 20 our pilot study are available at the tables in the 21 back. But what it showed, in over 14 months of 22 operation, we removed over 200 pounds of these 23 chemicals from the soil. 24 Now, it was so effective during our 25 pilot study, that we have -- we do continue to</p>	<p style="text-align: right;">Page 20</p> <p>1 released from the system. So, basically, all of the 2 chemicals that are sucked from the ground through 3 the system remain in the vapor treatment system and 4 are permanently removed from the soil vapor. 5 So, based on our analysis, based on 6 the remedial investigation, based on our soil vapor 7 extraction pilot study, Alternative 1 was not chosen 8 because it just doesn't prevent the migration of 9 VOCs to the groundwater. Therefore, the proposed 10 alternative for OU-2 is soil vapor extraction. 11 Soil vapor extraction will be used to 12 reduce the source of the chemicals in the soil 13 vapor, so that they do not migrate to groundwater. 14 It would permanently remove them from the soil 15 vapor, through the system. 16 VOC -- excuse me. Soil vapor 17 extraction works very well for several reasons. 18 First, number one, it permanently removes the VOCs 19 from the soil vapor. 20 Number two, it works very well in the 21 types of geology and soil that we have here at JPL, 22 and that was shown during our pilot study. 23 Third, it protects the groundwater 24 from further migration of these chemicals through 25 the soils.</p>
<p style="text-align: right;">Page 19</p> <p>1 operate the pilot study to date, and it does 2 continue to remove the chemicals from the soil vapor 3 to date. 4 Now, this is a conceptual drawing of 5 how soil vapor extraction works. Now, let me point 6 out some of the details of this diagram. It is 7 fairly simplified but it does give you a good 8 picture of how soil vapor extraction works. 9 First, here, this is from -- these are 10 the past seepage pits that were used back -- as 11 Peter said, back in the '30s and '40s that released 12 VOCs into the soil and soil vapor. These VOCs are 13 basically -- it's like a vacuum. The soil vapor 14 extraction system is like a vacuum that sucks these 15 soil vapor, the chemicals, into this extraction 16 well, right here, and extracts the vapors, in a 17 gaseous phase, to the surface through this little 18 pump. The pump then sends the chemicals into the 19 vapor treatment system. 20 Now, the vapor treatment system 21 consists of granulated activated carbon. What it 22 does, it's -- actually, it is like charcoal. What 23 it does is, when the vapors, with the chemicals, go 24 through the carbon, they bind to the carbon and they 25 stay permanently in the carbon and clean air is</p>	<p style="text-align: right;">Page 21</p> <p>1 Fourth, the treatment period is 2 relatively short, probably from one to five years, 3 operating these types of systems. 4 And, finally, because of these 5 advantages and because soil vapor extraction has 6 been so successful not only here in our pilot study 7 but at sites all over the country, it's given the 8 name "a presumptive remedy" by the United States 9 Environmental Protection Agency. What a presumptive 10 remedy is, it's the most effective technology for 11 conditions similar to JPL as was seen at sites 12 tested throughout the country. And that's another 13 main reason why we're proposing soil vapor 14 extraction for OU-2. 15 Based on the pilot study data, based 16 on the results of the remedial investigation and 17 ongoing quarterly monitoring, we are proposing soil 18 vapor extraction as the proposed alternative for JPL 19 OU-2. 20 Lee? 21 MR. SAUNDERS: Thank you, Richard. 22 We're now going to go into the comment 23 phase, comment and question phase of this meeting. 24 As a quick reminder, to ensure that all 25 participants' comments or questions are received --</p>

<p style="text-align: right;">Page 22</p> <p>1 receive equal treatment, please limit your comments 2 and questions to two minutes. We also ask you to 3 please state your first and last name and spell your 4 last name for the court reporters. 5 Thank you. 6 Do we have any speakers that would 7 like to comment or ask any questions? Please step 8 up to the mike. 9 Don't be shy. 10 Any questions or comments that you 11 want to submit to the court reporters in writing? 12 Yes, ma'am. Would you step up to the 13 mike, please. 14 MS. TUTT: My name is Elaine Suzanne 15 Tutt and my last name is T- as in Thomas -u-t-t as 16 in Tom, and I'm a resident of Altadena, and I also 17 work here at JPL. 18 Yeah. What I would like to ask is for 19 the alternatives, there's alternative one and 20 alternative two, and it seems like alternative one 21 is not really an alternative but it's just 22 continuing not to do something. If I'm wrong about 23 that I'd like to be corrected. And so alternative 24 two is to pursue the soil vapor extraction. 25 And it -- it's interesting. I</p>	<p style="text-align: right;">Page 24</p> <p>1 Thank you. 2 MR. RIPPERDA: I'll say something from 3 EPA's perspective on your question on alternatives. 4 And I also -- I agree with you about the short 5 notice. That's inexcusable on our part, on NASA's 6 part. I'm not sure why it happened that way, it 7 wasn't supposed to. These things were supposed to 8 be mailed out more than 10 days ago. So we screwed 9 up, and I have to take responsibility for that, too, 10 because I'm supposed to be overseeing what NASA's 11 doing to make sure they do it right. 12 But back to the alternatives. 13 It does look like, you know, NASA is 14 not giving anybody very much choice. They're giving 15 you alternative one and alternative two, and 16 alternative one is essentially do nothing. But in 17 a -- we talked about this, actually, before the 18 meeting, saying, "Wow, you know, we're not giving 19 people much choice here." But it's what Richard 20 said about a presumptive remedy. 21 In a case like this, soil vapor 22 extraction has been used at thousands of sites 23 around the country. It's been the one and only 24 technology that's proven to work consistently at 25 sites like this.</p>
<p style="text-align: right;">Page 23</p> <p>1 appreciate the description that was given today. I 2 wonder if some folks from either the Navy or maybe 3 someone -- the fellow from the EPA could tell us 4 more about some other alternatives that were 5 considered for this. 6 Also, my other comment is, that I just 7 received the notice, an invitation to this meeting, 8 today, May 12, and the meeting -- I just received it 9 in the mail today, May 12, from the post office in 10 mail box here in Altadena, and today -- the meeting 11 is also May 12. So I'd like to comment that this is 12 not soon enough before the meeting to be able to get 13 people over here and tell people about what an 14 interesting meeting this is. 15 I think that if we would have known 16 about it a little more in advance, it would have 17 helped. 18 MR. SAUNDERS: 30 seconds. 19 THE FLOOR: Thank you. 20 It would have helped to get more 21 interested community members out to the meeting. So 22 I just wanted to just pass that along. I would 23 think that at least 10 days would be the minimum 24 that you would let us know in advance of the 25 meeting.</p>	<p style="text-align: right;">Page 25</p> <p>1 You know, there's other things you can 2 do. You can dig up the whole site, but EPA doesn't 3 require a facility to investigate obviously 4 ridiculous choices, such as digging up the entire 5 site. 6 But there's other things that you can 7 do, like injecting steam to make it be cleaned up 8 faster. That would be called innovative 9 technology. But we don't really require that a 10 facility look at things like that, that would cost 11 so much more, when an off-the-shelf technology works 12 so well and relatively quickly. 13 So even though it looks like there's 14 not really much choice here, it's because NASA is 15 following the process that's set in law by Congress 16 that they're supposed to look at alternatives, but 17 we've been doing this long enough that the 18 alternatives boil down to, in some cases, some very 19 few or, in this case, only one real alternative. 20 Congress makes us look at no further 21 action just as a baseline, to make sure we're not 22 out there spending money willy-nilly. And other 23 than that, the way the law is written by Congress, 24 we're supposed to look at viable alternatives. 25 And in this case, we have enough</p>

<p style="text-align: right;">Page 26</p> <p>1 experience to know that soil vapor extraction is 2 actually the only viable alternative. But we're 3 still supposed to do it in this way when we go to 4 public with our various alternatives that NASA is 5 proposing. 6 We haven't changed the process, even 7 though we've learned enough to know that there 8 actually is only one real alternative here. 9 So I don't know if NASA wants to say 10 anything. 11 MR. ROBLES: Just because it's SVE now 12 doesn't mean that if, in the future, new technology 13 comes in that we find better that we won't revisit 14 this. This is not like cast in stone right now. 15 So I want to assure the public that as 16 technologies develop, we are required through the 17 process to periodically review what we're doing and, 18 if we see some thing better, and if an issue comes 19 up that we want to augment the SVE with another 20 technology that has appeared to be better, that's 21 what we do. 22 So as the technology improves, one of 23 the things -- I've been in this business for 30 24 years. One of the things that amazes me is the 25 regulations are always set forth before the</p>	<p style="text-align: right;">Page 28</p> <p>1 do review what we've done and, again, see if we're 2 doing the right thing. 3 And, secondly, as I think was 4 mentioned today, this is the proposed alternative, 5 as well. The opportunity here is that we are 6 presenting, though limited, but what we think is the 7 best tentative, we do encourage your comments as to 8 what you think if this is the best alternative. And 9 that's why this part of the process involves public 10 comment. 11 So thank you. 12 MR. SAUNDERS: Any other comments? 13 And just a couple of comments I wanted 14 to make was, we did mail these out on Tuesday, 15 May 8. Obviously, it wasn't enough time, so we'll 16 definitely make sure that we mail these farther in 17 advance, to get out to you in plenty of time to plan 18 to attend the meeting. 19 And one other comment, as Richard is 20 basically saying, is the purpose of this meeting is 21 you can come here and provide some alternatives that 22 you feel might be useful to add into the record, 23 that we can consider in the future. 24 Are there any other comments or 25 questions from the public?</p>
<p style="text-align: right;">Page 27</p> <p>1 technology catches up. But as technology improves, 2 we in the environment community can say, "Okay, 3 look, this new technology might be better been SVE, 4 so let's replace or let's augment." 5 So don't think that this is it. We're 6 only going to do SVE and that's it, we've lost the 7 opportunity. We're required through the process, 8 and Mark is always on my case about this, is to make 9 sure that the technology matches what we need to 10 do. And so we're going to revisit this. This is 11 not cast in stone. 12 We have meetings quarterly and we will 13 discuss this, and we will have information meetings 14 in the future because we still need your inputs. So 15 as we go on, hopefully we'll find some technology 16 with the silver bullet that will clean everything 17 up. We hope. Some day. But until now we have to 18 use what we've got. 19 MR. ZUROMSKI: I just want to make two 20 quick comments just to clarify what Peter said, as 21 well. 22 It's true that every five years we do 23 what is called a five-year review once we sign the 24 legal document that Mark talked about called the 25 ROD, the record of decision. So every five years we</p>	<p style="text-align: right;">Page 29</p> <p>1 Yes. 2 MS. BLAIR: My name is Susan Blair, 3 B-l-a-i-r. I'm also an Altadena resident. Mine's a 4 curiosity question. Once the gases come up through 5 the pipe into the chamber where the carbon is and it 6 absorbs the chemical, what happens to those 7 carbons? 8 MR. ZUROMSKI: What happens is, once 9 the carbon becomes full of all the different 10 chemicals that we are pulling from the soil vapors, 11 we have to, as Peter stated earlier, in accordance 12 with all the state, local and federal regulatory 13 requirements, take that carbon canister, remove it, 14 and then it's either recycled or incinerated or 15 somehow disposed of in a very legal manner 16 off-site. And then we then replace the carbon with 17 brand new carbon and it continues the process 18 again. 19 MS. BLAIR: Thank you. 20 MR. SAUNDERS: Do we have any other 21 comments or questions from the public? 22 Yes, ma'am. 23 MS. COMPTON: Cynthia Compton, 24 C-o-m-p-t-o-n. I'm an employee of JPL and 25 interested community member. I have a few</p>

1 questions, so I'll just plow through them in my two
2 minutes.

3 You said that in the '50s to the
4 early '60s a sewer system replaced the seepage
5 pits. Does that mean the chemicals are now going
6 into the sewer system, and where do they go from
7 there?

8 Other questions I have are: Is there
9 a record of what other alternatives were considered
10 other than these one and two, and where can we read
11 or find out about that?

12 And it says the pilot system has
13 removed 200 pounds of VOCs. Out of how many is
14 predicted or known to be at the site?

15 It says the -- I think the -- what I'm
16 hearing is that the VOCs are in the vapor or the
17 pockets of the soil. So what about the soil itself,
18 and all the VOCs in the soil particles, and, you
19 know, once you remove it from the vapors does it now
20 migrate from the soil particles back into the vapors
21 afterwards?

22 And I also agree with the short notice
23 to the public, and that's why there, in my opinion,
24 are not adequate representation from the community
25 here. I got the e-mail notice on Wednesday and

1 I don't know if you've seen around the
2 lab these circles with the ducks on it because
3 they're saying this is a storm water drain, this is
4 sanitary sewer. We don't want chemicals going down
5 there. That's part of our regulation. We have a
6 whole office on-site to manage that. So that's not
7 going down there. That's one of the reasons.

8 The second -- well, I'll answer your
9 last item on the notices. There is repositories in
10 the local area, the libraries, that you can get
11 these documents, and there is on the record of when
12 we sent the notice. And we apologize. We had a
13 little SNAFU. But we had sent 4,732 mailers.

14 Now, I have received some phone calls
15 that people did receive them by Monday and Tuesday
16 of this week, but there was a slight mix-up where
17 you might have been the ones that didn't get it
18 until later. We did send the e-mail out -- I don't
19 know what happened. Well, we want to send it
20 earlier, so that's a good comment. We're going to
21 have to notice -- I think we're going to have to
22 send them more than 10 days earlier, to make sure
23 that the mail -- because there was some problems
24 with some of the post offices in sending this stuff
25 out, so we want to make sure it does.

1 didn't really see it until Friday, about 6 p.m. on
2 Friday. And I would like to know: Is there some
3 kind of record of when notices are sent out to the
4 public and where they're at.

5 And the other thing is, I think I was
6 talking to Richard about who these notices are sent
7 to in a half a mile radius from the site. What
8 about -- I understand sending it another half a mile
9 to get more public is maybe too many -- you know,
10 too costly, but what about sending the notice to the
11 customers --

12 MR. SAUNDERS: Time.

13 MS. COMPTON: -- of the water
14 companies that are involved?

15 MR. SAUNDERS: Thank you.

16 Quite a few questions, and we'll try
17 to address those one at a time.

18 MR. ROBLES: Good questions.

19 On the first one is, we do not send
20 chemicals down the sewer system. What happens is we
21 try to recycle them. They're usually used up in the
22 processes. If we can't recycle them, we try to
23 destroy them in some form of fashion. The
24 regulations try to minimize sending stuff down the
25 sanitary sewer. We're very particular about that.

1 We also put it in the paper. We put
2 it in the four local papers and L.A. Times. But I
3 also notice that some people didn't see that, so we
4 might have to augment in the future. So we have to
5 be creative about which way -- do you guys listen to
6 radio? Or -- might that be a better way? I'm just
7 asking. Because we're trying to get more items out,
8 and that's why we have two meetings.

9 So if you could tell the public. You
10 know, I apologize. Come out Monday. I would love
11 to see 100 people here, or more. But we have sent
12 4,732 of mailers, plus the 6,000 JPLers who were
13 contacted.

14 Okay?

15 MR. ZUROMSKI: I think I'm going to
16 address the other two of them. I think Peter
17 covered lot of yours.

18 The first is, if you do want to see
19 the other types of technologies that were evaluated,
20 that is in the feasibility study and that is
21 available at all of the document repositories. And
22 that shows you the detailed analysis, like I talked
23 to you about earlier, that we go through to evaluate
24 the technologies. And it will show when certain
25 things were dropped out and when certain things were

<p style="text-align: right;">Page 34</p> <p>1 retained. And it is very detailed, it is about 2 three -- three inches, four inches thick, but it is 3 very easy to look at. So feel free, it's at all the 4 document repositories. 5 The second question I think I'm going 6 to answer is, the amount of chemicals that are in 7 the soil vapor and how they move around. 8 There are different ways to -- 9 technically, to estimate how much is in the soil 10 vapor. I can't get into every little detail of how 11 that is done. Again, that is in the feasibility 12 study as well. But there is an estimate of 13 somewhere between three to five thousand pounds, 14 5,000 being the maximum that we believe could be in 15 the soil vapors, and that also includes what would 16 be in the soils. 17 When we say "soil vapors," since they 18 are volatile organic compounds they tend to be in a 19 vapor state, and so that is why we are removing soil 20 vapors by soils themselves. 21 Anybody? 22 MR. RIPPERDA: I'll add a little bit 23 to that. That's actually a great question about 24 soil vapor versus soil, and what Richard said is 25 right, but I'm just going to add a little bit.</p>	<p style="text-align: right;">Page 36</p> <p>1 vapor," that doesn't mean we're only looking at the 2 vapor. What we really care about is what's in the 3 soil and about any rainwater that might migrate 4 through that soil, deabsorb it, and carry it down to 5 groundwater. 6 MR. SAUNDERS: Any other feedback from 7 our representatives? 8 MR. ROBLES: Did we answer all your 9 questions, ma'am. 10 THE FLOOR: What about when you remove 11 the VOCs from the vapors, as more 12 chemicals evaporate out of the soil into the -- 13 MR. ROBLES: Right. That's why you 14 constantly do that. The question is -- there was 15 one question that she had asked, once you remove the 16 particles through the vapor, are there any particles 17 left on the soil. 18 This is a continuous process because 19 you want it to volatilize that material because it's 20 a volatile organic. So you want to draw it out. So 21 you constantly are pulling pressure and putting a 22 vacuum on it to suck it up. Eventually there should 23 be no particles left there. 24 I'd say no, because any system cannot 25 100 percent clean. You can't get the last molecule</p>
<p style="text-align: right;">Page 35</p> <p>1 We estimate, or NASA estimates, that 2 there's up to about 5,000 pounds total of these 3 things, and that's total in the soils, absorbed in 4 the soils and in the soil vapor. 5 When it's located like it is, 50 to 6 200 feet below the surface, you actually have to 7 drill a well, a bore hole, to get down to it. And 8 the act of drilling that bore hole and taking your 9 sample, you can't -- it drives the VOCs out of that 10 piece of soil. So you can't just take a sample of 11 the soil and analyze how much is in the soil. It's 12 just not very effective. So what we do instead is, 13 we measure what's in the soil vapor. It's very 14 easy. You drill your same bore hole, suck some air 15 in, and that volatilizes it off the soil. 16 So we're being somewhat legalistic 17 when we're always saying the VOCs in the soil vapor, 18 because that's where we actually measured it, and 19 that represents how much is actually in the soil. 20 And there's various equations that you can use, 21 based on the soil chemistry with partitioning 22 coefficients and things like that, to calculate from 23 what you have in the soil vapor back to what's in 24 the soil. 25 So just because we always say "soil</p>	<p style="text-align: right;">Page 37</p> <p>1 out. What you're trying to do is get as low as 2 possible until the technology doesn't work anymore. 3 And then you wait for another technology, where you 4 say, "Hey, we're kind of finished, and there is no 5 more threat to the groundwater." And that's what 6 you do on it. It's not an exact science, we try our 7 best, and that's what we do. 8 And that, like I said, the document, 9 as Richard said, is thick. It has everything in 10 there that you want to know. And if it's not in 11 there, we'll have informative meetings and we can 12 give you the boring lecture. Because this is -- 13 it's long. And to read these documents right now, 14 at -- once we finish this process, sometime in the 15 future, we're going to have so much documents that 16 you will not believe. I mean, we generate so much 17 information. This process requires of the 18 government to do this, to make sure that we make the 19 right decision. And we have to publish these 20 documents so you, the public, can read them and say, 21 "How did you guys make that choice?" That's what 22 we call the administrative record, and that's why we 23 have that in the repositories for you. 24 MR. SAUNDERS: I don't know if it was 25 mentioned, in the proposed plan, the information</p>

<p style="text-align: right;">Page 38</p> <p>1 repositories are located on, if you want that 2 information, on page 6 of the proposed plan. That's 3 the different information repositories. 4 The item of record, I believe, is kept 5 here? At JPL? 6 MR. ROBLES: There's three. 7 MR. SAUNDERS: Okay. 8 And, again, what you're telling us 9 tonight is very useful, this evening, because we 10 need this feedback. I believe this is the first 11 time that you've held a public meeting here, so this 12 is a learning process for NASA, for all of us, and 13 we appreciate this feedback that you're giving to 14 us. It will help us make meetings better in the 15 future, to communicate information to the public 16 better. 17 Yes, ma'am. 18 MS. COMPTON: The only question that 19 wasn't answered is have you considered sending these 20 public notices to the customers of the water 21 companies that are impacted. 22 MR. ROBLES: Thank you. 23 We have a representative here. I'm 24 not going to put him on the spot. 25 We meet with the Raymond Basin</p>	<p style="text-align: right;">Page 40</p> <p>1 referring to is like when -- 2 MR. ROBLES: Oh, the customers? You 3 mean the water customers? 4 MS. COMPTON: You and me that are 5 drinking the water and paying the purveyor to send 6 water to our houses. 7 MR. ROBLES: Oh, so you're asking 8 should we send these to all the people that get the 9 water. 10 MS. COMPTON: All the customers who 11 live within a half mile radius. 12 MR. ROBLES: That's a good point. 13 MR. SAUNDERS: I think, also, the 14 point you may be making, and I may be wrong about 15 this, but when utilities have public hearings and 16 such, they usually include a public notice in their 17 mail-out, in the billing. And, of course, that is 18 their mailing, it's not ours. So we would have to 19 approach a utility to do that. Whether they would 20 do it for free or charge us, I don't know, but 21 that's something we would have to discuss with the 22 appropriate utility. 23 MR. ROBLES: Right. That's a 24 community right to know. 25 That's a very good suggestion, that</p>
<p style="text-align: right;">Page 39</p> <p>1 Management Board. We have dialogue. We are meeting 2 with the city of Pasadena on Monday. The water 3 purveyors know about these meetings, and we have 4 told them in their board meetings and the word has 5 gotten out that way. We have gone to local 6 communities like, I think, Northeast Trees and a few 7 others. We've told them about this. 8 We are looking to expand our mailing 9 list. So if you can recommend some groups or people 10 that you want to put on the mailing list, please let 11 us know. Because we have no fear of sending as many 12 as it takes, so that the public -- normally , 13 believe it or not -- I've been in this business 30 14 years, and I've only been at one public meeting 15 where it was standing room only, and that was 16 because there was -- the government needed to expand 17 a bombing range. You know how controversial that 18 was. But most of the time people get their 19 information through the newsletter, or they call up, 20 or they go to the repositories. But if you have any 21 suggestions of people that you want on the mailing 22 list or groups, please let us know. But this 23 information has gotten out to the purveyors of 24 water. 25 MR. SAUNDERS: I believe what you're</p>	<p style="text-align: right;">Page 41</p> <p>1 when we're going to talk about groundwater it might 2 be a good thing is to go and talk to the purveyors 3 and see if we should send those notice -- that's a 4 good point. Thank you. 5 MS. BLAIR: The Lincoln Avenue Water 6 Company, every member of the Lincoln Avenue Water 7 Company is shareholder, so they have the right to 8 know that. 9 MR. ROBLES: That's right. That's a 10 good point. Thank you. I didn't think about that. 11 That's good. Particularly when we're talking about 12 groundwater. Good suggestion. 13 MR. SAUNDERS: Right. 14 Did we answer all your questions? Was 15 there anything else that we skipped over? 16 You had around six questions. 17 MS. COMPTON: Record of public 18 notices. Is that in the repositories or only here 19 at JPL? 20 MR. SAUNDERS: That type of 21 information is put in the information repository. 22 The public notice for the meeting would be put in 23 there. 24 Okay. Any other questions or comments 25 from the public? We welcome this opportunity to</p>

1 hear from you. Anyone else?

2 Well, there is another opportunity, if
3 you think of further questions that you would like
4 to ask. We are having another public meeting on
5 Monday night, and that information is also in that
6 proposed plan fact sheet, with times. And the
7 public comment period is continuing on.

8 Again, I want to thank you for
9 attending. We encourage you to review and comment
10 on the proposed plan. Final decision regarding
11 cleanup will be made after your public comments have
12 been received and considered.

13 The public comment period started on
14 May 7 and runs through June 11, 2001. If requested,
15 NASA may consider extending the public comment
16 period. Written comments and requests for
17 extensions of the comment period should be mailed or
18 e-mailed to Peter Robles, and his address is in the
19 fact sheet and it's also up here on the slide here.

20 If there's nothing else, no other
21 comments, anything -- any last statements from our
22 representatives up here, I thank you for attending
23 this afternoon and have a good evening.

24 Oh, yes. And there will continue to
25 be -- the representatives here will be available

CERTIFICATE

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4
5
6
7 I, LESLIE A. MAC NEIL, RPR, CSR
8 No. 7187, in and for the State of California, do
9 hereby certify:

10 That the foregoing ____-page
11 proceedings were taken down by me in shorthand at
12 the time and place stated herein, and represent a
13 true and correct transcript of the proceedings.

14 I further certify that I am not
15 interested in the event of the action.

16 WITNESS my hand this ____ day of
17 _____, 2001.
18
19

20 _____
21 Certified shorthand
22 reporter in and for the
23 State of California
24
25

1 after the meeting, if you want to do follow-ups or
2 ask any further questions. And, again, if you think
3 of a question after we've officially closed this
4 meeting, feel free to write it out on a comment
5 sheet and submit it to our court reporters and such
6 so they can include it in the public record.

7 Thank you.
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7 PUBLIC MEETING AND PUBLIC COMMENT PERIOD

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9 JET PROPULSION LABORATORY

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11 PASADENA, CALIFORNIA

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15 MONDAY, MAY 14, 2001

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17 6:00 P.M. to 9:00 P.M.

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23 Reported by:

24 Vickie Blair

25 C.S.R. No. 8940, RPR-CRR

<p style="text-align: right;">Page 2</p> <p>1 PASADENA, CALIFORNIA; MONDAY, MAY 14, 2001 2 6:00 P.M. 3 ---000---</p> <p>4</p> <p>5 MR. SAUNDERS: Good evening. 6 We're going to start a couple minutes 7 early. Welcome to the Jet Propulsion Laboratory. Thank 8 you for taking the time tonight to attend this meeting. 9 My name is Lee Saunders. I'm an 10 Environmental Public Affairs Officer for the U.S. Navy and 11 a facilitator for tonight's meeting about the proposed plan 12 to select a remedy to clean up soils at the National 13 Aeronautic Space Administration, Jet Propulsion Laboratory 14 located here in Pasadena. 15 During this portion of the meeting, you, the 16 community, can provide questions and comments to these 17 representatives and their agencies on the proposed plan. 18 Excuse me. Let me backtrack just a moment. 19 Prior to the meeting, you had the 20 opportunity to speak with NASA, federal, and local lead and 21 regulatory agency representatives on a one-to-one basis 22 about the proposed cleanup actions. 23 During this portion of meeting, you, the 24 community, can provide questions and comments to those 25 representatives and their agencies on the proposed plan.</p>	<p style="text-align: right;">Page 4</p> <p>1 Once we've heard from all the presenters, we will open the 2 floor for questions and comments. You may want to use the 3 comment sheets that are in the back to write your questions 4 down during the formal comment session while we're waiting 5 for opportunity. 6 To assure that everyone that wishes to make 7 a comment or ask a question has a fair and equal 8 opportunity to do so, we ask that you limit your questions 9 or comments to two minutes. At the end of that time, 10 please take your seat. If you have not finished your 11 remarks, you may continue for another three-minute period 12 after we have heard from all the other speaks. 13 We have court reporters -- two of them -- 14 here tonight, so we ask you to please state your first and 15 last name and spell your last name before you begin your 16 comments. 17 If you do not wish to provide verbal 18 comments or questions, you may also submit your comments 19 and questions in writing. There are comment sheets 20 available on the tables in the back for those of you in the 21 audience who would prefer to submit your input by this 22 method. 23 For those of you wondering why the U.S. Navy 24 is involved with the environmental cleanup of a NASA 25 facility, the explanation is fairly simple. In 1999, NASA</p>
<p style="text-align: right;">Page 3</p> <p>1 These comments and questions will be included in a meeting 2 transcript and become part of the final decision for soil 3 cleanup at JPL. Representing the agencies responsible for 4 cleanup and talking to you the proposed plan and its 5 remedial alternatives are agency representatives who will 6 each introduce themselves. 7 To my left -- do you want to -- 8 MR. ROBLES: Oh, Peter Robles of NASA representing 9 the SuperFund cleanup here. 10 MR. ZUROMSKI: Hi. I'm Richard Zuromski with the 11 Naval Facilities Engineering Command. 12 MR. GEBERT: I'm Richard Gebert with the State of 13 California Department of Toxic Substances Control. 14 MR. RIPPERDA: I'm Mark Ripperda with the 15 United States Environmental Protection Agency. 16 MR. YOUNG: I'm David Young with the Los Angeles 17 Water Regional Quality Control Board. 18 MR. SAUNDERS: Ground rules for today's meeting are 19 as follows: This evening's format will consist of 20 presentations by our representatives about the proposed 21 plan and remedial alternatives, followed by a formal 22 comment session where you, the community, can provide us 23 with your comments and questions. 24 I'm going to ask you to please hold your 25 questions until the presentations have been completed.</p>	<p style="text-align: right;">Page 5</p> <p>1 and the Naval Facilities Engineering Command, most commonly 2 known by the acronym NAFAC reached a memorandum of 3 agreement establishing roles and responsibilities that 4 state NASA may procure environmental engineering and the 5 consultancy services from NAFAC and its subordinate 6 commands. 7 In late 1999, NAFAC became heavily involved 8 in providing environmental services to NASA and JPL. Peter 9 Robles, remedial property manager for NASA, is our first 10 presenter. 11 Peter. 12 MR. ROBLES: Good evening. What we're going to 13 present today is a site description to give a little 14 history of why this site is on the SuperFund list. Then 15 we're going to have Mark Ripperda talk about regulatory 16 framework, coming up with Richard Zuromski talking about 17 site assessment and investigation activities and the 18 remedial activities and the proposed remedial alternatives 19 for OU-2 soils. 20 We will, at a later date, talk about 21 groundwater. We'll have another public meeting in the near 22 future. But right now what we're focusing on are the soils 23 underneath JPL and how to remediate the contaminants in the 24 soil to minimize any migration into the groundwater. And 25 that's what we're going to do right now.</p>

<p style="text-align: right;">Page 6</p> <p>1 The site that we call JPL has been active 2 since the late '30s, early '40s. It was owned by the Army 3 ordnance, and then it was owned by NASA in '59 to '60 when 4 we took it over. 5 During the 40s and '50s, seepage pits were 6 the main method to dispose of waste. At that time, it was 7 the most accepted practice. It was within the regulations, 8 no problem at all. We found out later that that was a 9 mistake, and we had to correct that. In the late '50s 10 early '60s, we, NASA, started programing to replace these 11 seepage pits with sewer lines. 12 Now, the indication and a question that came 13 in on Saturday was "So contaminants are going down the 14 sewer line." No, they're not. That's a good question. 15 Very little gets put into landfills. We usually destroy or 16 recycle the chemicals that we use today, or they are used 17 up in the operational processes. We do not do that. The 18 regulatory requirements require us to make sure of that, so 19 from the standpoint today, we are all within regulations. 20 But at the time, the main reason why the contaminants got 21 into the ground soil is because of these seepage pits. 22 In 1992, the site became a SuperFund site. 23 It was put on the national priorities list, and the EPA 24 will talk a little bit more about that. 25 We are talking about trying to remediate</p>	<p style="text-align: right;">Page 8</p> <p>1 light. 2 So what's it mean to be a SuperFund site, 3 and for that matter, what's -- oh, I got a toy. 4 What's it mean to be a SuperFund site? For 5 that matter, what's SuperFund? About 20 years ago, 6 Congress passed a law, it's called CERCLA, and I'll talk 7 about what the acronym means, that authorize a tax on the 8 chemical industry. And that tax all went into a trust 9 fund, which is called the SuperFund, which EPA can spend to 10 clean up abandoned hazardous waste sites. 11 That same law passed by Congress also gave 12 EPA the authority to go to existing, ongoing sites such as 13 NASA/JPL that have contamination that might pose a serious 14 threat to public health, and we have the authority to force 15 them to clean it up. 16 In order for us to use that authority, we 17 have to rank how bad the potential hazard might be, and if 18 it scores high enough, the site is put on a national 19 priorities list also called an NPL. And like Peter said, 20 that happened with NASA/JPL in 1992. 21 So what was it that first got NASA/JPL on 22 the national priorities list? In the late, very late '80s, 23 the City of Pasadena found some chemicals in their drinking 24 water wells right here across the Arroyo just through their 25 standard compliance testing that they have to do for the</p>
<p style="text-align: right;">Page 7</p> <p>1 Operable Unit 2, which is -- as I said, before currently 2 all operations meet federal, state, and local requirements. 3 We have a host of regulations that we have to follow, and 4 so, therefore, we are assured that we're doing what's 5 right. What we're dealing with is past practices that we 6 have to take care of. 7 Here is a conceptual model of what we're 8 talking about. What you have here is a VOC plume, volatile 9 organic carbons, that have gone through the soils because 10 of past practices from JPL. The area that we are most 11 concerned with is 50 feet below the surface to about 200 12 feet, which is the groundwater zone that we're talking 13 about. 14 In the soils, we're talking about 15 chlorinated solvents, and when we say "vadose zone," we 16 mean in a vapor state in the soil. NASA wants to address 17 this issue tonight, and we will be addressing groundwater 18 in the future. 19 Now we'll have the EPA talk about regulatory 20 framework. 21 MR. ZUROMSKI: I just want to ask the court 22 reporters really quick, can you hear me okay without having 23 to use the microphone? Okay. Mark and I are going to try 24 to do ours without the microphone then. 25 MR. RIPPERDA: That way I can stand out of the</p>	<p style="text-align: right;">Page 9</p> <p>1 State of California. And that's what got us -- all of us 2 regulators, the State of California, Richard, and David and 3 myself -- well, actually our predecessors. But that got us 4 involved looking over their shoulders making sure that 5 they're doing the cleanup appropriately. 6 Right when the contamination was first 7 sound, City of Pasadena put treatment systems onto their 8 wells immediately, which means that anybody who is drinking 9 the water was protected right from the beginning. 10 But to cleanup the actual release, to 11 cleanup all the aquifer and the source here on the site is 12 a long, lengthy process. And the majority of that process 13 is called the remedial investigation feasibility study. 14 Which means they have to go out drill bore holes all over 15 the site, take soil samples, soil vapor samples. They have 16 to put in monitoring wells, take groundwater samples both 17 on the site, they also went out into the neighborhoods put 18 monitoring wells out there, and sampled them. They also 19 worked with the water purveyors to look at their water 20 analyses. And with all of that, they figured out where the 21 contamination is now, where it came from originally, and 22 they go through the process of deciding how best to clean 23 it up. 24 Usually you clean up groundwater 25 contamination by looking at the source where the</p>

<p style="text-align: right;">Page 10</p> <p>1 contamination is coming from and at the aquifer itself in 2 two separate stages because you're using a different 3 physical mechanisms to cleanup the two. So what they're 4 working on now, and what this whole meeting is about, is 5 the actual cleanup of the source here on the site. So As 6 Peter said to keep it from going into the water, which 7 means that ultimately the water can be cleaned up faster. 8 So in the feasibility study, they look at 9 various alternatives on how best to clean something up. 10 And in some cases, such as here at JPL, there's only one 11 real option. I don't know if you've read the proposed 12 plan, but it looks like you were given two choices, do 13 nothing or do what NASA wants to do. And that may look 14 like you don't really have a choice, but Congress says that 15 we also have to look at the do-nothing alternative because 16 they don't want EPA out there spending money willy-nilly 17 making faculties and industries spending money if doing 18 nothing might work. I don't know why they don't trust us 19 to be good stewards of public money, but they don't. 20 So in this case they had to look at the 21 do-nothing alternative. And the other alternative that 22 they show to you in the proposed plan which is called vapor 23 extraction system is something that EPA has found over the 24 20 years we've been doing SuperFund cleanups to be the one 25 system that really works in a case like this where you got</p>	<p style="text-align: right;">Page 12</p> <p>1 how well they've involved the public. If you think they've 2 been hiding things from you or whatever, which they 3 haven't, but anything you might think, you can make comment 4 on that. It doesn't just have to be on their remedy. 5 They then have to respond to your comments. 6 They have to check with the regulators, make sure that the 7 State of California and EPA is happy with how they've 8 responded to the public. And, at that point, if we're all 9 happy with each other, they do the record of decision, and 10 then they go on to the remedy implementation. And 11 eventually, if a site gets completely cleaned up, they're 12 no longer a SuperFund site. They get delisted from the 13 national priorities list. 14 But even if that happens, there's still 15 always going to be long-term monitoring and review of what 16 the situation is here at JPL. 17 This is just kind of what we've already 18 said. This is a chance for you to ask us questions, and 19 also make comments on what you think about both the remedy 20 and the process, you know, everything that's going on right 21 now. 22 You can always call Peter. Peter's name and 23 number is in the documentation you got. I don't think my 24 phone number is there, but -- it is? Good. And you can 25 also feel free to call me, and I'll even say feel free to</p>
<p style="text-align: right;">Page 11</p> <p>1 all the organic compounds in the soil deep beneath the 2 site. You can't really dig up a site. You know, one 3 alternative might be dig up the whole site, take the soil 4 away. But, obviously, you can't do that here because you'd 5 be digging up all of JPL. 6 There are some other technologies such as 7 heating the soil with large electrical current, actually 8 what is called vitrify it. So you turn it into one solid 9 lump. You melt the soil. And you can't do that here. 10 So technologies like that which exist but 11 they don't really make sense for a site, we, the 12 government, don't make NASA do a detailed evaluation of. 13 So we essentially cut right to the chase is that what we're 14 proposing the one and only system that really works best 15 now. There might be something else that comes along in the 16 future, but for now, this is what makes sense. 17 So once they select a remedy, they have to 18 do a legal document, which is called a record of decision. 19 Before you get to that point -- I forgot the most important 20 part, the yellow box, where we are now. We have to go out 21 to the public and say, "This is what we're proposing. What 22 do you think?" 23 So you can comment both on, you know, their 24 selection of a remedy, but you can also make whatever 25 comments you want on, you know, how they ran the process,</p>	<p style="text-align: right;">Page 13</p> <p>1 call the State of California guys if you feel like you're 2 not getting appropriate responses from NASA. 3 MR. ZUROMSKI: Thank you, Mark. 4 Hi. My name is Richard Zuromski. I'm with 5 the Naval Facilities Engineering Command, and, as Lee 6 described earlier, I'm here to assist NASA in their cleanup 7 efforts here at JPL. 8 From 1994 through 1998, JPL conducted what's 9 called the remedial investigation, as Mark described 10 earlier. During the remediation investigation, in over 11 nine different sampling events, JPL took 45 soil vapor 12 wells, 35 soil borings, and three test pits throughout the 13 site to investigate where the chemicals may be found in 14 what we're calling Operable Unit 2. Further, over 37 -- or 15 37 of those points were turned into permanent monitoring, 16 soil vapor monitoring points that is we must now monitor on 17 a regular basis to see how the contaminants are moving, or 18 not moving, in this case, within the subsurface. 19 Now, during the remedial investigation, the 20 samples identified the extent to which the chemicals were 21 in the soil, and the results showed that there were 22 elevated levels of four different volatile organic 23 compounds. They were carbon tetrachloride, trichloethene, 24 Freon 113, and 1,1-dichloroethene. 25 Now, these chemicals were used back, as</p>

<p style="text-align: right;">Page 14</p> <p>1 Peter described earlier, in the '30s, '40s, and '50s to 2 clean out the inside of rocket motors that they were 3 testing back in those days, which they don't use here 4 anymore. And that's where the chemicals came from that are 5 now in OU-2.</p> <p>6 The OU-2 risk assessment, the human health 7 assessment, determined that there were no risks above 8 regulatory thresholds from exposure to soils or soil 9 vapor.</p> <p>10 Now, the primary reason that this risk was 11 so low was the fact that, as Peter described earlier, these 12 chemicals are now more than 50 feet below the ground 13 surface. So exposure to humans is very much unlikely.</p> <p>14 However, there is a risk that these 15 chemicals will continue to migrate through the soils and 16 eventually reach the groundwater, and that's the purpose of 17 the remedy that we're talking about here today, is to make 18 sure that those chemicals do not enter the groundwater and 19 pose a further problem in the groundwater.</p> <p>20 Now, we are currently studying how to remove 21 these chemicals from groundwater. And that is going to be 22 the subject of a meeting very similar to this probably 23 within a year from now. However, the groundwater and the 24 risk from chemicals in the groundwater, there's no risk 25 because the water purveyors, or those people who deliver</p>	<p style="text-align: right;">Page 16</p> <p>1 they migrate to the groundwater.</p> <p>2 To meet this objective, kind of as Mark 3 talked about earlier, JPL evaluated several alternatives to 4 remove the chemicals. And of those alternatives, two were 5 selected for very detailed evaluation. And if you look in 6 your proposed plan, I think it's on the third or fourth 7 page, there's a list of nine criteria that we have to go 8 through when evaluating each technology in detail.</p> <p>9 The first is called no further action. As 10 Mark talked about earlier, this is a baseline that all 11 other technologies are compared to. Now, at this site, no 12 further action would entail continuing a regular soil vapor 13 monitoring program to see how the contaminants are behaving 14 in the subsurface.</p> <p>15 The second, and the proposed alternative, 16 for OU-2 is soil vapor extraction with granular activated 17 carbon treatment and also the continuation of our regular 18 monitoring program. To help evaluate these two 19 alternatives, JPL conducted a pilot test of the soil vapor 20 extraction technology. And this started back in 1998. In 21 over 14 months of operation of this pilot test, we removed 22 roughly 200 pounds of VOCs, of these chemicals, out of 23 roughly up to a maximum of 5,000 pounds that are throughout 24 the site. But within this area, we removed 200 pounds of 25 chemicals from the subsurface.</p>
<p style="text-align: right;">Page 15</p> <p>1 the water to the public, have to meet very, very strict 2 regulatory requirements. So today's meeting is focused on 3 removing this source of contaminants, what we call source 4 reduction, from the soils before they reach the 5 groundwater. And that's the purpose of our meeting here 6 today.</p> <p>7 Now, this graphic shows the extent to which 8 any level of a volatile organic compound was detected here 9 at the site during the remedial investigation. Now, the 10 hottest or most -- the highest levels of these chemicals 11 were found in the north central part of the site, right up 12 here where most of the laboratory activities took place. 13 And that's where we focused a lot of our efforts to date 14 doing some pilot studies which I'll talk about in just a 15 moment.</p> <p>16 Now, based on the results of the remedial 17 investigation and our ongoing monitoring program of the 18 soil vapor, we have found that the soil vapor and the 19 chemicals in the soil vapor have not migrated off the JPL 20 site boundary; but it does encompass roughly 45 acres on 21 the site.</p> <p>22 So based on the analysis in the remedial 23 investigation and also the continuing monitoring we do here 24 at the site, the remedial objective for Operable Unit 2 is 25 to remove the chemicals, the VOCs from the soils before</p>	<p style="text-align: right;">Page 17</p> <p>1 Now, this was so successful, this system is 2 currently still operating here at the site, and then the 3 pilot study does go on and will continue throughout the 4 proposed plan stage and all the way through the record of 5 decision stage until we decide the final, full-scale size 6 of the technology that we'll put here at the site.</p> <p>7 This is a conceptual diagram of how soil 8 vapor extraction works. First you have here, as Peter 9 described earlier, the seepage pits which are no longer 10 existing here at the site. But this is where the chemicals 11 came from, and then the VOCs, chemicals, became deposited 12 here in the soil.</p> <p>13 Now, soil vapor extraction is fairly simple. 14 What we do is we apply a very strong vacuum, just like your 15 vacuum cleaner, to suck these VOCs, these chemicals, right 16 out of the soils and the soil vapor into this vapor 17 extraction well right here.</p> <p>18 Now, these vapors are -- since we're talking 19 about volatile organic compound, the compound become in a 20 vapor phase when we pull a vacuum on the soils and the soil 21 vapor. So what you're extracting here is air and chemicals 22 in vapor, which comes above the surface through this pump 23 into a vapor treatment system.</p> <p>24 The vapor extraction system consists of 25 granular activated carbon. What it does is it captures the</p>

<p style="text-align: right;">Page 18</p> <p>1 chemicals and holds them within the vapor treatment system, 2 and then clean air is released from the system. What 3 happens every three to six months, depending on how much 4 chemicals we're removing from the system, we have to take 5 those carbon filters that are inside this vapor treatment 6 system and take them to either a recycling facility or 7 dispose of them in some type of legal, regulatory manner. 8 And then we take a new carbon treatment system and replace 9 it and continue the vapor extraction phase. And that's 10 generally how the vapor extraction system works. 11 So, based on our analysis, alternative one 12 does not meet our remedial objective of keeping the 13 chemicals from migrating to the groundwater; therefore, 14 we're proposing soil vapor extraction as our proposed 15 remedy. 16 There are several reasons why we're choosing 17 soil vapor extraction from our proposed remedy. 18 First, it permanently removes the chemicals 19 from the soil and soil vapor. 20 Secondly, it protects the groundwater from 21 further migration of the VOCs. 22 Third, it's fairly simple to operate and 23 fairly inexpensive to implement. 24 Fourth, the treatment period is relatively 25 short, probably from one to five years, depending on how</p>	<p style="text-align: right;">Page 20</p> <p>1 from the public? Please feel free to come up to the mike, 2 and, again, state your first and last name and spell the 3 last name for the reporters, court reporters. 4 Thank you, sir. 5 MR. STORK: My name is Edward Stork, and my last 6 name is spelled S-t-o-r-k. And I actually am the president 7 of the Rose Bowl Riders, which is right next door. And so 8 I was interested to hear that the chemicals are apparently 9 only within the boundaries of JPL; correct? Can you tell 10 me where the soil vapor extraction wells will actually be 11 located? 12 MR. ZUROMSKI: Sure. I can tell you that at this 13 point in time, the one location that we are currently 14 operating the soil vapor extraction is right where I was 15 pointing at the highest levels of the chemicals that we 16 found in the site. 17 The other wells -- what we're doing right 18 now is we're doing continuing monitoring of the soil vapor 19 levels at the site, and that actually -- I think Mark 20 described the remedial design phase that occurs after we 21 sign our record of decision where we actually look, at that 22 point in time, where the highest levels of the chemicals 23 are and then we place the wells. 24 So, no, we don't know exactly where they 25 would be right now; but we would focus on where the highest</p>
<p style="text-align: right;">Page 19</p> <p>1 effective the system is here at the site. But based our on 2 pilot-scale results, it should have been very expected that 3 the cleanup should not take very long. 4 And, finally, because this soil vapor 5 extraction technology has all those qualities of being very 6 effective in the type of soils here at JPL, in being very 7 effective in removing this type of chemical from the soil, 8 EPA says that this is what is called a presumptive remedy 9 where basically this is the best technology that you can 10 use at hundreds of other sites, including here at JPL, 11 throughout the country. And so we call it what is deemed a 12 presumptive remedy. 13 So based on our pilot study, and based on 14 our ongoing analysis of the site, NASA proposes soil vapor 15 extraction as the proposed remedy for OU-2. 16 MR. SAUNDERS: Thank you, Richard. 17 We are now available for comments and 18 questions from you, the public. As a quick reminder to 19 ensure that all participants providing comments or 20 questions provide equal treatment, please limit your 21 comments or questions to two minutes. We also ask you to 22 please state your first and last name, and spell your last 23 name for the court reporters. 24 Thank you. 25 Now, do we have any questions or comments</p>	<p style="text-align: right;">Page 21</p> <p>1 levels of the chemicals are. 2 MR. RIPPERDA: But the level of contamination as 3 you move south -- you're here from the riding stables; 4 right? 5 MR. STORK: Yeah, just below here, yeah. 6 MR. RIPPERDA: As he said, the highest level of 7 contaminants -- and can you put that back up. But the 8 highest level of contaminants are up in the northern part, 9 and in itself, it's negligible. 10 MR. ZUROMSKI: Right. About there where my light 11 is shining is where the current vapor extraction pilot 12 study is operating, and that's where the highest levels of 13 the chemicals were found. 14 MR. STORK: Just out of curiosity, how much area 15 does one of these vapor extraction wells take up when you 16 install it? 17 MR. ZUROMSKI: The actual well itself is usually 18 probably from four to six inches just for the well itself; 19 however, the radius of influence from the vacuum at the 20 site can be anywhere from four to eight, seven or eight 21 hundred feet from the center of the well. 22 MR. STORK: Thank you. 23 MR. ROBLES: The size of the site, you also want to 24 know how big is that. It's about 45 acres. That yellow 25 spot. None of the wells that we're talking about for soil</p>

<p style="text-align: right;">Page 22</p> <p>1 vapor will be off-site. It's all on-site because that's 2 where all the soils are at. 3 But understand also, everybody, that we 4 revisit this periodically. Every five years we go back and 5 revisit so we make sure we're doing the right thing with 6 the regulators. 7 Any other questions? 8 MR. RIPPERDA: Also something about -- 9 MR. ROBLES: Because of the comments on Saturday, I 10 want to thank the young lady, we are planning to have a 11 third meeting. And we want to have it in Altadena. And 12 what we want to do is probably -- we're trying to set it up 13 ahead -- I haven't talked to anybody over there -- we'll 14 probably host it in the middle of June so that we can make 15 sure that the whole community has a chance. 16 I didn't know this, and this is one of the 17 reasons why we have public meetings, is that the folks in 18 Altadena can't make it over here at night because there's 19 no bus service. So we want to know if there are any 20 concerns out there. 21 So if you get another proposed plan in the 22 mail, please don't get angry at us. We're just announcing 23 that we're going to have a third meeting in Altadena so we 24 can make sure we have the public comments in there. We 25 want to solicit comments. We want to make sure that the</p>	<p style="text-align: right;">Page 24</p> <p>1 the effectiveness of this extraction program. Is it a 2 hundred percent effective? How do you know how well you're 3 doing, and does the testing continue throughout that term? 4 And, also, if it's not a hundred percent effective, does 5 that mean that a certain percentage will ultimately reach 6 groundwater and continue to contaminate it? 7 MR. ZUROMSKI: I'll answer your question. 8 First of all, every technology that we 9 attempt, we choose because it is the most effective. 10 Hundred percent effective, I don't think we could 11 guarantee. But it is the most effective technology for the 12 types of chemicals at the site and for the types of soils 13 that we have at the site. 14 Now, what we do to ensure that that is the 15 most effective technology for the site is, number one, we 16 conduct a regular monitoring program of the soil vapor 17 around the site to see -- and to actually watch, we've 18 actually seen some of the data is in the back of the room, 19 you can watch the chemicals that have been removed slowly 20 disappear from the soil. And we do that on a very regular 21 basis. And during our pilot study, we actually did it 22 monthly to see what the effect of the system is on the 23 chemicals in the soil. 24 Now, what we do for the long term is once 25 we've signed our record of decision, and once we've</p>
<p style="text-align: right;">Page 23</p> <p>1 public is comfortable with this. They might have better 2 suggestions, so that's what we're going to shoot for. So I 3 want to thank the lady on Saturday, that was a good comment 4 that we had. 5 And we have talked to some water purveyors, 6 and they're willing to put it in their billing. So we're 7 going to work on that. 8 MR. SAUNDERS: All right. Quick feedback from 9 Saturday's meeting. 10 What other questions do we have, comments? 11 Please feel free to come up to the mike and express your 12 feelings your opinions, your comments, your questions at 13 this time. 14 MR. CLAIRDAY: Good evening. John Clairday, with 15 the -- and the last name spelled C-l-a-i-r-d-a-y. I'm a 16 board member with the Lincoln Avenue Water Company, which 17 is a neighbor, right next door. We appreciate the 18 opportunity to come over here for this meeting. 19 Just one statement, and then one question, 20 as well. And I don't think this is inconsistent with what 21 Mr. Robles said, but we already do have a groundwater 22 problem, and I think that's been recognized. But just 23 wanted to emphasize that since it's an area that we're 24 interested in. 25 And then a second one, I'm wondering about</p>	<p style="text-align: right;">Page 25</p> <p>1 installed the system throughout the site, we do -- again, 2 we have a regular monitoring program to see how effective 3 it is. And then at least every five years, we do what is 4 called a five-year review where the regulatory agencies, 5 NASA, sits down, looks at the results, how well the 6 technology is looking. Looks at new possible innovative 7 technologies, if the technology we've chosen was not as 8 effective as we thought it would be, and basically says, 9 "Are we still doing the best thing that we can do to remove 10 the chemicals from the environment?" 11 And that's generally how we monitor how 12 effective the technology is over the long term. 13 Now, if you look in the back of the room, we 14 have an estimate, I think. I can't read from here, but it 15 looks like it's a little over \$3 million. That's a present 16 value cost of what it will take to operate the system from 17 our estimate one to five years and then monitor for another 18 25 years after that. So we do continuously monitor this 19 throughout the entire period to make sure that what we've 20 done is the best thing for the site. 21 As far as a level that we remove the 22 chemicals to, that level is determined during the record of 23 decision where we, as Mark said, we all sit down and agree 24 to a level that we will clean the site to. And that's 25 based on all the regulatory requirements that we're</p>

<p style="text-align: right;">Page 26</p> <p>1 required to meet.</p> <p>2 MR. RIPPERDA: And on an ongoing -- you know, the</p> <p>3 groundwater that they're also responsible for so over time</p> <p>4 whatever the recommended decision for the groundwater</p> <p>5 remedy has, that will include monitoring and clean up of</p> <p>6 the aquifer. So they're removing the source to protect it</p> <p>7 from going into the aquifer in the future, but for the</p> <p>8 contaminants that have already gotten into the groundwater,</p> <p>9 NASA will, of course, still be responsible for that in the</p> <p>10 future.</p> <p>11 MR. SAUNDERS: Thank you.</p> <p>12 Any other questions, comments? Please feel</p> <p>13 free to take this opportunity.</p> <p>14 Thank you.</p> <p>15 MS. COMPTON: My name is Cynthia Compton,</p> <p>16 C-o-m-p-t-o-n. I'll try to be easier on you. I gave a lot</p> <p>17 of comments on Saturday, and I appreciate your response to</p> <p>18 my comments.</p> <p>19 My first comment is that two minutes is not</p> <p>20 enough time for my questions and my comments.</p> <p>21 MR. RIPPERDA: Can we give her a little extension?</p> <p>22 MR. SAUNDERS: Well, again, we can get her more</p> <p>23 time after the other folks have responded, she can come</p> <p>24 back up again.</p> <p>25 MS. COMPTON: There you go. Quickly, I know that</p>	<p style="text-align: right;">Page 28</p> <p>1 next meeting, has right in the text of the E-mail that this</p> <p>2 is a public meeting and when and where it will be.</p> <p>3 Oh, and he wants me to talk about soil</p> <p>4 particles, also.</p> <p>5 MS. COMPTON: He's already tried of me.</p> <p>6 MR. RIPPERDA: Yeah. So her question pertains to</p> <p>7 the fact that in the slides it almost always says "soil</p> <p>8 vapor." It didn't say "VOCs in the soil"; It always said,</p> <p>9 "Soil vapor." And that's because the actual measurements</p> <p>10 we take are of the soil vapor.</p> <p>11 When the contaminants are 50 feet, a hundred</p> <p>12 feet below the surface, you actually have to drill a bore</p> <p>13 hole to get down to it, and the act of drilling that bore</p> <p>14 hole, the heat and the air that you have to inject to bring</p> <p>15 the cuttings, the dirt, back up out of the hole, basically</p> <p>16 blow away all the VOCs that you're trying to sample for.</p> <p>17 So you can't take a soil very well from a hundred feet deep</p> <p>18 and analyze that soil for how much contamination it has in</p> <p>19 it.</p> <p>20 So instead what you do is you drill your</p> <p>21 bore hole, and let it sit for a few weeks, reach</p> <p>22 equilibrium, and then suck some air out. And because the</p> <p>23 VOCs are attached to the soil particles and all the soil</p> <p>24 around your bore hole, they evaporate naturally. And then</p> <p>25 they'll fill the bore hole when you suck the air out you</p>
<p style="text-align: right;">Page 27</p> <p>1 there was some testing done in building 107 in the basement</p> <p>2 for the air atmosphere, and I wonder if that has turned</p> <p>3 into one of the 37 permanent test points.</p> <p>4 Another question I have is: I'm interested</p> <p>5 in a record of the public notices that were sent out in the</p> <p>6 newspapers and the mailings. And I'm still having a little</p> <p>7 trouble distinguishing the difference between contamination</p> <p>8 in particles of soil versus contamination in the vapors,</p> <p>9 and if maybe we could clarify that a little bit with me.</p> <p>10 And the other thing is my same comments I</p> <p>11 made Saturday, I think we, the public, deserve a little bit</p> <p>12 earlier notice, and thank you for offering another</p> <p>13 meeting. I'm going to put that in my official comments,</p> <p>14 but a little earlier notice and something to the JPL</p> <p>15 employees that says public meeting may be in the subject</p> <p>16 title.</p> <p>17 MR. RIPPERDA: I'm going to say one thing to the</p> <p>18 last thing that Cindy said. She showed me a copy of the</p> <p>19 E-mail that went out, and I don't know how many JPL</p> <p>20 employees are here, but the actual E-mail didn't say</p> <p>21 anything about the meeting. It just said, "The proposed</p> <p>22 plan is available at a website," and she had a great</p> <p>23 comment that the actual E-mail needs to announce when and</p> <p>24 where the meetings are. So we'll make sure that NASA, in</p> <p>25 the E-mail that goes out in the next week or two for the</p>	<p style="text-align: right;">Page 29</p> <p>1 see, "Oh, we have VOCs in the air that we're sucking out,"</p> <p>2 so therefore we know that the VOCs in the soil in this</p> <p>3 location.</p> <p>4 So you can do kind of rough correlations</p> <p>5 between the amount that's in the soil vapor you're</p> <p>6 measuring to what actually in the soil.</p> <p>7 So it's just the physics of not being able</p> <p>8 to measure the actual particles in the soil; we have to do</p> <p>9 a correlation between the soil vapor and the soil. So</p> <p>10 we're always going to talk about soil vapor, even though</p> <p>11 what we're really concerned about is what is attached to</p> <p>12 the soil because what gets attached to the soil is what</p> <p>13 gets dissolved in rainwater, and ultimately brings it on</p> <p>14 the drinking water aquifer.</p> <p>15 MS. COMPTON: But you're talking about cleaning --</p> <p>16 MR. RIPPERDA: But when we're sucking, we're</p> <p>17 sucking the vapor out, but as we suck the vapor out, the</p> <p>18 particles of the chemicals that are attached to the soil</p> <p>19 are always evaporating. As we suck more air, more</p> <p>20 particles evaporate out of the soil, and relatively</p> <p>21 quickly, you suck those particles of contamination out.</p> <p>22 MR. ROBLES: You asked about the building. We're</p> <p>23 not familiar with that, and I know --</p> <p>24 MR. RIPPERDA: You have to talk louder in your</p> <p>25 answer for the court reporter.</p>

<p style="text-align: right;">Page 30</p> <p>1 MR. ROBLES: Which building are you in?</p> <p>2 THE WITNESS: Building 107.</p> <p>3 MR. ROBLES: 107. It must be in our proposed plan.</p> <p>4 I don't remember it exactly. I can get back to you with</p> <p>5 that information.</p> <p>6 MR. ZUROMSKI: We'll have to respond to that.</p> <p>7 MR. ROBLES: Yeah, we'll have to respond to you.</p> <p>8 Again, I appreciate that. It's not familiar to me after</p> <p>9 looking at the document. I'll have to research it and get</p> <p>10 back to you.</p> <p>11 MR. SAUNDERS: Thank you.</p> <p>12 What other questions, comments, do we have?</p> <p>13 I'm sure there are plenty of other folks out there that</p> <p>14 have some feedback for us. Please feel free to come up to</p> <p>15 the mike and provide your comments, questions.</p> <p>16 If there's no other comments or questions,</p> <p>17 ma'am, if you'd like to come back up and get your next</p> <p>18 three minutes in, you're welcome to come up at this time.</p> <p>19 MS. COMPTON: I'm okay.</p> <p>20 MR. SAUNDERS: Well, if there are no other</p> <p>21 questions or comments, we're going to wrap this up in a</p> <p>22 moment.</p> <p>23 I want to thank you for attending. We</p> <p>24 encourage you to review and comment on the proposed plan,</p> <p>25 and there are copies on the back table of the proposed</p>	<p style="text-align: right;">Page 32</p> <p>1 And if you could put that slide back up.</p> <p>2 It's already been mentioned, if there are any further</p> <p>3 comments, questions, the last slide has Peter's address.</p> <p>4 Feel free to send your comments, your questions, mail them,</p> <p>5 E-mail them, to Richard at this address. It's also</p> <p>6 included in the proposed plan fact sheet.</p> <p>7 MR. ROBLES: Peter.</p> <p>8 MR. SAUNDERS: And we look forward to any further</p> <p>9 feedback you may have at this time. And before we close, I</p> <p>10 will give you one other chance if there are any comments or</p> <p>11 questions.</p> <p>12 If not, thank you for coming and have a good</p> <p>13 evening.</p> <p>14 (Whereupon, at 9:00 P.M., the HEARING was</p> <p>15 adjourned.)</p> <p>16 ---000---</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>
<p style="text-align: right;">Page 31</p> <p>1 plan.</p> <p>2 Final decisions regarding cleanup will be</p> <p>3 made after public comments have been received and</p> <p>4 considered. The public comment period started May 7 and</p> <p>5 runs through June 11. Keep in mind the comments and</p> <p>6 questions asked tonight, as well as responses, not only the</p> <p>7 ones given here but further, more in-depth responsive</p> <p>8 answers to your comments and questions included in a</p> <p>9 responsiveness summary which will be included with a RoD</p> <p>10 into the admin record.</p> <p>11 Yes.</p> <p>12 MR. ZUROMSKI: The comment period will be extended</p> <p>13 in accordance with the new meeting.</p> <p>14 MR. ROBLES: Okay. We're going to extend the</p> <p>15 comment period, all right.</p> <p>16 MR. ROBLES: We've extended the comment period past</p> <p>17 the third meeting so, therefore, it's fair for everyone.</p> <p>18 MR. SAUNDERS: So instead of waiting for the public</p> <p>19 to request an extension, we've already extended the comment</p> <p>20 period at this time.</p> <p>21 Do we have a date as of yet?</p> <p>22 MR. ROBLES: That will be in the mail.</p> <p>23 MR. SAUNDERS: It will be in the information sent</p> <p>24 out to the public as to how long the comment period has</p> <p>25 been extended.</p>	<p style="text-align: right;">Page 33</p> <p>1 STATE OF CALIFORNIA)</p> <p>2) ss</p> <p>3 COUNTY OF LOS ANGELES)</p> <p>4 I, Vickie Blair, Certified Shorthand Reporter,</p> <p>5 number 8940, RPR-CRR, for the State of California, do</p> <p>6 hereby certify;</p> <p>7 That the foregoing transcript is a true record</p> <p>8 of the proceedings.</p> <p>9 I hereby certify that I am not interested in</p> <p>10 the event of the action.</p> <p>11 IN WITNESS WHEREOF, I have subscribed my name</p> <p>12 this 4th day of June, 2001.</p> <p>13</p> <p>14 -----</p> <p>15 Certified Shorthand Reporter for</p> <p>16 the State of California</p> <p>17</p> <p>18</p> <p>19</p> <p>20</p> <p>21</p> <p>22</p> <p>23</p> <p>24</p> <p>25</p>

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PUBLIC MEETING AND PUBLIC COMMENT PERIOD
MONDAY, MAY 14, 2001
6:00 P.M.

NASA JET PROPULSION LABORATORY
4800 OAK GROVE DRIVE
PASADENA, CALIFORNIA

<p style="text-align: right;">Page 2</p> <p>1 PASADENA, CALIFORNIA 2 MONDAY, MAY 14, 2001; 6:00 P.M. 3 4 MR. SAUNDERS: Good evening. We're 5 going to start a couple minutes early. Welcome to 6 the Jet Propulsion Laboratory. Thank you for taking 7 the time tonight for attending this meeting. 8 My name is Lee Saunders. I am an 9 environmental public affairs officer for the U.S. 10 Navy and the facilitator for tonight's meeting about 11 the proposed plan to select a remedy to clean up 12 soils at the National Aeronautics Space 13 Administration Jet Propulsion Laboratory, located 14 here in Pasadena. 15 During this portion of the meeting 16 you, the community, can provide questions and 17 comments to these representatives and their agencies 18 on the proposed plan. 19 Excuse me. Let me backtrack just a 20 moment. Prior to the meeting you had the 21 opportunity to speak with NASA federal and local 22 lead and regulatory agency representatives on a 23 one-to-one basis about the proposed cleanup 24 actions. During this portion of the meeting you, 25 the community, can provide questions and comments to</p>	<p style="text-align: right;">Page 4</p> <p>1 alternatives, followed by a formal comment session 2 where you, the community, can provide us with your 3 comments and questions. 4 I'm going to ask you to please hold 5 your questions until the presentations have been 6 completed. Once we've heard from all 7 representatives, we will open the floor for 8 questions and comments. You may want to use the 9 comment sheets that are in the back, to write your 10 questions down during the formal comment session, 11 while we're waiting for that opportunity. 12 To ensure that everyone that wishes to 13 make a comment or ask a question has a fair and 14 equal opportunity do so, we ask that you limit your 15 comments or questions to two minutes. At the end of 16 that time, please take your seat. If you have not 17 finished your remarks, you may continue for another 18 three-minute period after we've heard from all the 19 other speakers. 20 We have court reporters, two of them, 21 here tonight. So we ask you to please state your 22 first and last name and spell your last name before 23 you begin your comments. If you do not wish to 24 provide verbal comments or questions, you may also 25 submit your comments and questions in writing.</p>
<p style="text-align: right;">Page 3</p> <p>1 these representatives and their agencies on the 2 proposed plan. These comments and questions will be 3 included in a meeting transcript and become part of 4 the final decision for soil cleanup at JPL. 5 Representing the agencies responsible 6 for cleanup and talking to you about the proposed 7 plan and its remedial alternatives are agency 8 representatives, who will each introduce 9 themselves. To my left ... 10 MR. ROBLES: Peter Robles, of NASA, 11 representing the Superfund cleanup group. 12 MR. ZUROMSKI: Hi. I'm Richard 13 Zuromski from the Naval Facilities Engineering 14 Command. 15 MR. GEBERT: I'm Richard Gebert, with 16 the state of California Department of Toxic. 17 MR. RIPPERDA: And I'm Mark Ripperda, 18 with the United States Environmental Protection 19 Agency. 20 MR. YOUNG: Hi. David Young, with the 21 Los Angeles Regional Water Quality Control Board. 22 MR. SAUNDERS: Ground rules for 23 today's meeting are as follows: This evening's 24 format will consist of presentations by our 25 representatives about the proposed plan and remedial</p>	<p style="text-align: right;">Page 5</p> <p>1 There are comment sheets available on the tables in 2 the back, for those of you in the audience that 3 would prefer to submit your input by this method. 4 For those of you wondering why the 5 U.S. Navy is involved with the environmental cleanup 6 of a NASA facility, the explanation is fairly 7 simple. In 1999 NASA and the Naval Facilities 8 Engineering Command, more commonly known by the 9 acronym NAVFEC, reached a memorandum of agreement 10 establishing roles and responsibilities that state 11 NASA may procure environmental engineering and 12 consultancy services from NAVFEC and its subordinate 13 commands. In late 1999 NAVFEC became heavily 14 involved in providing environmental services to 15 NASA-JPL. 16 Peter Robles, remedial project manager 17 from NASA, is our first presenter. 18 Peter? 19 MR. ROBLES: Good evening. 20 What we're going to present today is a 21 site description, give a little history of why this 22 site is on the Superfund list, then we're going to 23 have Mark Ripperda talk about regulatory framework, 24 coming up with Richard Zuromski talking about site 25 assessment and investigation activities and the</p>

<p style="text-align: right;">Page 6</p> <p>1 remedial activities and the proposed remedial 2 alternatives for OU-2 soils. 3 We will, at a later date, talk about 4 groundwater. We'll have another public meeting in 5 the near future. But right now what we're focusing 6 on is the soils underneath JPL and how to remediate 7 the contaminants in the soil, to minimize any 8 migration into the groundwater. And that's what 9 we're going to do right now. 10 The site that we call JPL has been 11 active since the late '30s, early '40s. It was 12 owned by the Army Ordinance, and then it was owned 13 by NASA in '59 to '60, when we took it over. 14 During the '40s and 50s seepage pits 15 were the main method to dispose of waste. At that 16 time it was the most accepted practice. It was 17 within the regulations, no problem at all. We found 18 out later that that was a mistake and we had to 19 correct that. In the late '50s, early '60s we, 20 NASA, started programming to replace these seepage 21 pits with sewer lines. 22 Now, in the cas- -- in the question 23 that came in on Saturday was: So contaminants are 24 going down the sewer line. No, they're not. That's 25 a good question. Very little gets put into</p>	<p style="text-align: right;">Page 8</p> <p>1 feet below the surface to about 200 feet, which is 2 the groundwater zone that we're talking about. 3 In the soils we're talking about 4 chlorinated solvents, and when we say "vadose zone" 5 we mean in the vapors stayed in the soil. NASA 6 wants to address this issue tonight. We will be 7 addressing groundwater in the future. 8 Now we'll have the EPA talk about 9 regulatory framework. 10 MR. ZUROMSKI: I just want to ask the 11 court reporters really quick: Can you hear me okay 12 without having to use the microphone? 13 Okay. We're going to try -- Mark and 14 I are going to try to do ours without the 15 microphone. 16 MR. RIPPERDA: So I can stand out of 17 the light. 18 So what's it mean to be a Superfund 19 site and, for that matter, what's -- cool. I get a 20 toy. What's it mean to be a Superfund site. For 21 that matter, what's Superfund. 22 About 20 years ago Congress passed a 23 law, it's called CERCLA, I won't talk about what the 24 acronym means, that authorized a tax on the chemical 25 industry, and that tax all went into a trust fund</p>
<p style="text-align: right;">Page 7</p> <p>1 landfills. We usually destroy or recycle the 2 chemicals that we use today, or they are used up in 3 the operational processes. We do not do that. 4 Regulatory requirements require us to make sure of 5 that. So from the standpoint today, we are all 6 within regulations. But at the time, the main 7 reason why the contaminants got into the ground soil 8 is because of these seepage pits. 9 In 1992 the site became a Superfund 10 site. It was put on the national priorities list, 11 and the EPA will talk a little more about that. We 12 are talking about trying to remediate Operable Unit 13 2, which is the soils. 14 As I said before, currently all 15 operations meet federal, standard, local 16 requirements. We have a host of regulations that we 17 have to follow and so, therefore, we are assured 18 that we're doing what's right. What we're dealing 19 with is past practices that we have to take care 20 of. 21 Here is a conceptual model of what 22 we're talking about. What you have here is a VOC 23 plume, volatile organic carbons, that have gone 24 through the soils because of past practices from 25 JPL. The area that we're most concerned with is 50</p>	<p style="text-align: right;">Page 9</p> <p>1 which is called the Superfund, which EPA can spend 2 to clean up abandoned hazardous waste sites. That 3 same law passed by Congress also gave EPA the 4 authority to go to existing, ongoing sites such as 5 NASA-JPL that have contamination that might pose a 6 serious threat to public health. 7 And we have the authority to force 8 them to clean it up. In order for us to use that 9 authority, we have to rank how bad the potential 10 hazard might be. If it scores high enough, the 11 site's put on a national priorities list, also 12 called the NPL. And, like Peter said, that happened 13 with NASA-JPL in 1992. 14 So what was it that first got NASA-JPL 15 on the national priorities list? In the late, very 16 late '80s the city of Pasadena found some chemicals 17 in their drinking water wells, right here across the 18 arroyo, just through their standard compliance 19 testing that they have to do with the state of 20 California, and that's what got all of us 21 regulators, the state of California, Richard and 22 David and myself -- well, actually, our 23 predecessors, but that got us involved looking over 24 their shoulders, making sure that they're doing the 25 cleanup appropriately.</p>

<p style="text-align: right;">Page 10</p> <p>1 Right when the contamination was first 2 found, the city of Pasadena put treatment systems on 3 their wells immediately, which means that anybody 4 who is drinking the water was protected right from 5 the beginning. But to clean up the actual release, 6 to clean up both the aquifer and the source here on 7 site is a long, lengthy process. 8 And that -- the majority of that 9 process is called the remedial investigation and 10 feasibility study, which means that they have to go 11 out, drill bore holes all over the site, take soil 12 samples, soil vapor samples, that included 13 monitoring wells, take groundwater samples, both on 14 the site -- they also went out into the 15 neighborhoods, put monitoring wells out there, 16 sampled them. They also worked with the water 17 purveyors, to look at their water analyses. And 18 with all of that, they figured out where the 19 contamination is now, where it came from originally, 20 and they go through a process of deciding how best 21 to clean it up. 22 You usually clean up groundwater 23 contamination by looking at the source, where the 24 contamination is coming from, and at the aquifer 25 itself in two separate stages because you're using</p>	<p style="text-align: right;">Page 12</p> <p>1 found, over the 20 years that we've been doing 2 Superfund cleanups, to be the one system that really 3 works in a case like this, where you've got volatile 4 organic compounds in the soil deep beneath the 5 site. You can't really dig up the site. You know, 6 one alternative might be dig up the whole site, take 7 the soil away. But, obviously, you can't do that 8 here because you'll be digging up all of JPL. 9 There's some other technologies, such 10 as heating the soil with large electrical currents 11 to actually -- what's called vitrify it, so you turn 12 it into one solid lump, you melt the soil, and you 13 can't do that here. So technology like that, which 14 exists but they don't really make sense for a site, 15 you know, we, the government, don't make NASA do a 16 detailed evaluation of. 17 So they essentially cut right to the 18 chase and said, "What we're proposing is the one and 19 only system that really works best now. There might 20 be something else that comes along in the future, 21 but for now this is what makes sense." 22 So once they select a remedy, they 23 have to do a legal document which is called a record 24 of decision. Before you get to that point -- I 25 forgot the most important part. The yellow box,</p>
<p style="text-align: right;">Page 11</p> <p>1 different physical mechanisms to clean up the two. 2 And so what they're working on now and what this 3 whole meeting about is the actual cleaning up of the 4 source here on site, as Peter says, to keep it from 5 going into the water, which means that ultimately 6 the water can be cleaned up faster. 7 So in the feasibility study, they look 8 at various alternatives on how best to clean 9 something up. And in some cases, such as here at 10 JPL, there is only one real option. I don't know if 11 you've read the proposed plan, but it looks like you 12 were given two choices: Do nothing or do what NASA 13 wants to do. 14 And that may look like you don't 15 really have a choice, but Congress said that we 16 always have to look at the do nothing alternative 17 because they didn't want EPA out there spending 18 money willy-nilly, making facilities and industry 19 spending money if doing nothing might work. I don't 20 know why they didn't trust us to be good stewards of 21 public money, but they didn't. So in this case, 22 they had to look at the do nothing alternative. 23 And the other alternative that they've 24 shown to you in the proposed plan, which is called 25 soil vapor extraction, is something that EPA has</p>	<p style="text-align: right;">Page 13</p> <p>1 where we are now, they have to go out to the public 2 and say, "This is what we are proposing. What do 3 you think?" So you can comment both on, you know, 4 their selection of a remedy, but you can also make 5 whatever comments you want on, you know, how they 6 random process, how well they've involved the 7 public, if you think they've been hiding things from 8 you or whatever, which they haven't, but anything 9 you might think, you can make comments on now. It 10 doesn't just have to be on their remedy. 11 They then have to respond to your 12 comments, they have to check with the regulators, 13 make sure that the state of California and EPA is 14 happy with how they've responded to the public. And 15 at that point, if we're all happy with each other, 16 they do the record of decision, and then they go on 17 for the remedy implementation. 18 And eventually, if the site gets 19 completely cleaned up, there's no longer a Superfund 20 site, you get delisted from the national priorities 21 list. But even if that happens, there's still 22 always going to be long-term monitoring and review 23 of what the situation is here at JPL. 24 And, you know, this is just kind of 25 what we've already said. This is a chance for you</p>

<p style="text-align: right;">Page 14</p> <p>1 to ask us questions, and also make comments on what 2 you think about both the remedy and the process, you 3 know, everything that's going on right now. You can 4 always call Peter. Peter's name and number is in 5 the documentation you got. I don't think my phone 6 number is there but -- it is. Good. You can also 7 feel free to call me. And I'll even say feel free 8 to call the state of California guys, if you feel 9 like you're not getting responses from NASA. 10 MR. ZUROMSKI: Thank you, Mark. 11 Hi. My name is Richard Zuromski. I'm 12 with the Naval Facilities Engineering Command and, 13 as Lee described earlier, I'm here to assist NASA in 14 their cleanup efforts here at JPL. 15 In 19- -- from 1994 through 1998 JPL 16 conducted what's called a remedial investigation, as 17 Mark described earlier. During the remedial 18 investigation, over nine different sampling events, 19 JPL took 45 soil vapor wells, 35 soil borings and 20 three test pits throughout the site to investigate 21 where the chemicals may be found in what we're 22 calling Operable Unit 2. Further, over 37 -- or 37 23 of those points were turned into permanent 24 monitoring -- soil vapor monitoring points that we 25 now monitor on a regular basis, to see how the</p>	<p style="text-align: right;">Page 16</p> <p>1 soils and eventually reach the groundwater. And 2 that's the purpose of the remedy that we're talking 3 about here today, is to make sure that those 4 chemicals do not enter the groundwater and pose a 5 further problem in groundwater. 6 Now, we are currently studying how to 7 remove these chemicals from groundwater. And that's 8 going to be the subject of a meeting very similar to 9 this, probably within a year from now. However, the 10 groundwater and the risks from chemicals in the 11 groundwater, there's no risk because the water 12 purveyors, or those people who deliver the water to 13 the public, have to meet very, very strict 14 regulatory requirements. So today's meeting is 15 focused on removing this source of contaminants, 16 what we call source reduction, from the soils before 17 they reach the groundwater. And that's the purpose 18 of our meeting today. 19 Now, this graphic shows the extent to 20 which any level of a volatile organic compound was 21 detected here at the site during the remedial 22 investigation. Now, the hottest or most -- the 23 highest levels of these chemicals were found in the 24 north central part of the site, right up here, where 25 most of the laboratory activities took place. And</p>
<p style="text-align: right;">Page 15</p> <p>1 contaminants are moving, or not moving in this case, 2 within the subsurface. 3 Now, during the remedial 4 investigation, samples identified the extent to 5 which the chemicals were in the soil, and the 6 results showed that there were elevated levels of 7 four different volatile organic compounds. They 8 were carbon tetrachloride, trichloroethene, 9 Freon 113 and 1,1-dichloroethene. 10 Now, these were -- these chemicals 11 were used back, as Peter described earlier, in 12 the '30s, '40s and '50s to clean out the inside of 13 rocket motors that they were testing back in those 14 days, which they don't use here any more, and that's 15 where the chemicals came from that are now in OU-2. 16 OU-2 risk assessment, the human health risk 17 assessment, determined that there were no risks 18 above regulatory thresholds from exposure to soils 19 or soil vapor. 20 Now, the primary reason that this risk 21 was so low was the fact that, as Peter described 22 earlier, these chemicals are now more than 50 feet 23 below the ground surface. So exposure to humans is 24 very much unlikely. However, there is a risk that 25 these chemicals will continue to migrate through the</p>	<p style="text-align: right;">Page 17</p> <p>1 that's where we focused a lot of our efforts to date 2 doing some pilot studies, which I'll talk about in 3 just a moment. 4 Now, based on the results of the 5 remedial investigation and our ongoing monitoring 6 program of the soil vapor, we have found that the 7 soil vapor and the chemicals in the soil vapor have 8 not migrated off the JPL site boundary but it does 9 encompass roughly 45 acres on the site. 10 So based on the analysis, and the 11 remedial investigation, and also the continuing 12 monitoring we do here at the site, the remedial 13 objective for Operable Unit 2 is to remove the 14 chemicals or the VOCs from the soils before they 15 migrate to the groundwater. 16 To meet this objective, kind of as 17 Mark had talked about earlier, JPL evaluated several 18 alternatives to remove the chemicals. And of those 19 alternatives, two were selected for a very detailed 20 evaluation. If you look in your proposed plan, I 21 think it's on the third or fourth page, there's a 22 list of nine criteria that we have to go through 23 when evaluating each technology in detail. 24 The first is called no further 25 action. As Mark talked about earlier, this is a</p>

<p style="text-align: right;">Page 18</p> <p>1 baseline that all other technologies are compared 2 to. Now, at this site no further action would 3 entail continuing our regular soil vapor monitoring 4 program, to see how the contaminants are behaving in 5 the subsurface. 6 The second, and the proposed 7 alternative for OU-2, is soil vapor extraction with 8 granular activated carbon treatment and, also, the 9 continuation of our regular monitoring program. 10 To help evaluate these two 11 alternatives, JPL conducted a pilot test of the soil 12 vapor extraction technology, and this started back 13 in 1998. In over 14 months of operation of this 14 pilot test, we removed roughly 200 pounds of VOCs, 15 these chemicals, out of roughly up to a maximum of 16 5,000 pounds that are throughout the site. But 17 within this area, we removed 200 pounds of chemicals 18 from the subsurface. 19 Now, this was so successful, this 20 system is currently still operating here at the site 21 and the pilot study does go on and will continue 22 throughout the proposed plan stage, all the way 23 through the record of decision stage, until we 24 decide the final full scale size of the technology 25 that we'll put here at the site.</p>	<p style="text-align: right;">Page 20</p> <p>1 carbon filters that are inside this vapor treatment 2 system and take them to either a recycling facility 3 or dispose of them in some recon- -- some type of 4 legal, regulatory manner. And then we take a new 5 carbon treatment system, and replace it, and 6 continue the vapor extraction phase. That's 7 generally how the soil vapor extraction works. 8 So based on our analysis, alternative 9 one does not meet our remedial objective of keeping 10 the chemicals from migrating to the groundwater. 11 Therefore, we're proposing soil vapor extraction as 12 our proposed remedy. There are several reasons why 13 we're choosing soil vapor extraction for our 14 proposed remedy. 15 First, it permanently removes the 16 chemicals from the soil and the soil vapor. 17 Secondly, it protects the groundwater 18 from further migration of the VOCs. 19 Third, it's fairly simple to operate 20 and fairly inexpensive to implement. 21 Fourth, the treatment period is 22 relatively short, probably from one to five years 23 depending on how effective the system is here at the 24 site. But based on our pilot site scale results, it 25 should be very exact and the cleanup should not take</p>
<p style="text-align: right;">Page 19</p> <p>1 This is a conceptual diagram of how 2 soil extraction works. First, you have here, as 3 Peter described earlier, the seepage pits, which are 4 no longer existing here at the site. But this is 5 where the chemicals came from, and then the VOCs, 6 chemicals, became deposited here in the soil. 7 Now, soil vapor extraction's fairly 8 simple. What we do is, we apply a very strong 9 vacuum, just like your vacuum cleaner, to suck these 10 VOCs, these chemicals, right out of the soils and 11 the soil vapor into this vapor extraction well, 12 right here. Now, these vapors are -- since we're 13 talking about volatile organic compounds, the 14 compounds become, in a vapor phase, when we pull a 15 vacuum on the soils and soil vapor. So what you're 16 extracting here is air and chemicals in vapor, which 17 comes above the surface through this pump, into a 18 vapor treatment system. And the vapor treatment 19 system consists of granular activated carbon. What 20 it does, is it captures the chemicals and holds them 21 within the vapor treatment system, and then clean 22 air is released from the system. 23 What happens every three to six 24 months, depending on how much chemical we're 25 removing from the system, we have to take those</p>	<p style="text-align: right;">Page 21</p> <p>1 very long. 2 And, finally, because this soil vapor 3 extraction technology has all those qualities, being 4 very effective in the types of soils here at JPL and 5 being very effective in removing this type of 6 chemical from the soil, EPA says that this is what 7 is called a presumptive remedy. Or basically, this 8 is the best technology that you can use at hundreds 9 of other sites, including here at JPL, throughout 10 the country. And so we call it what is -- what's 11 deemed to be a presumptive remedy. 12 So based on our pilot study and based 13 on our ongoing analysis of the site, NASA proposes 14 soil vapor extraction as the proposed remedy for 15 OU-2. 16 MR. SAUNDERS: Thank you, Richard. 17 We are now available for comments and 18 questions from you, the public. 19 As a quick reminder, to ensure that 20 all participants providing comments or questions 21 receive equal treatment, please limit your comments 22 or questions to two minutes. We also ask you to 23 please state your first and last name, and spell 24 your last name for the court reporters. Thank you. 25 Do we have any questions or comments</p>

<p style="text-align: right;">Page 22</p> <p>1 from the public? Please feel free to come up to the 2 mike and, again, state your first and last name and 3 spell the last name for the reporters -- court 4 reporters. 5 MR. ROBLES: Somebody ask a question, 6 please. 7 MR. SAUNDERS: Well, we have some 8 comments from the public. 9 Thank you, sir. 10 MR. ZUROMSKI: Thank you. 11 MR. STORK: My name is Edward Stork, 12 and my last name is spelled S-t-o-r-k, and I 13 actually am the president of the Rose Bowl Riders, 14 which is right next door. And so I was interested 15 to hear that the chemicals are apparently only 16 within the boundaries of JPL, correct? 17 Can you tell me where the soil vapor 18 extraction wells will actually be located? 19 MR. ZUROMSKI: We -- I can tell you 20 that at this point in time the one location that we 21 are currently operating the soil vapor extraction is 22 right where I was pointing, at the highest levels of 23 the chemicals that we found on the site. 24 The other wells -- what we're doing 25 right now is we're doing continuing monitoring of</p>	<p style="text-align: right;">Page 24</p> <p>1 MR. ZUROMSKI: Right. 2 MR. STORK: Okay. 3 MR. ZUROMSKI: Right up here's 4 where -- right about there, where my light's 5 shining? 6 MR. STORK: Uh-huh. 7 MR. ZUROMSKI: Is where the current 8 vapor extraction pilot study's operating. And 9 that's where the highest levels of the chemicals 10 were found on the site. 11 MR. STORK: And just out of curiosity, 12 how much area does one of these vapor extraction 13 wells take up, when you install it? 14 MR. ZUROMSKI: The actual well itself 15 is usually probably from four to six inches, just 16 for the well itself. However, the radius of 17 influence from the vacuum at the site can be 18 anywhere from four to eight -- seven or eight 19 hundred feet from the center of the well. 20 MR. STORK: Thank you. 21 (Inaudible.) 22 MR. ROBLES: The site -- the size of 23 the site, they also want to know how big is that. 24 It's about 45? 25 MR. ZUROMSKI: 45 acres.</p>
<p style="text-align: right;">Page 23</p> <p>1 the soil vapor levels at the site. And that, 2 actually -- I think Mark described the remedial 3 design phase that occurs after we sign our record of 4 decision, where we actually look -- where we 5 actually look, at that point in time, where the 6 highest levels of the chemicals are and then we 7 place the well. 8 So, no, we don't know exactly where 9 they would be right now, but we would focus on where 10 the highest levels of the chemicals were. 11 MR. RIPPERDA: But the level of 12 contamination as you move south -- you're here from 13 the riding stables, right? 14 MR. STORK: Right. Just below here, 15 yeah. 16 MR. RIPPERDA: As he said, the highest 17 level of contaminants -- can you put -- 18 MR. ZUROMSKI: Sure. 19 MR. RIPPERDA: You might want to put 20 the example up. 21 The highest level of contaminants are 22 up in the northern part. 23 MR. STORK: Right. 24 MR. RIPPERDA: And as you move south, 25 it's negligible to undetectable.</p>	<p style="text-align: right;">Page 25</p> <p>1 MR. ROBLES: 45 acres. That yellow 2 spot. 3 MS. COMPTON: You said none of the 4 wells -- 5 MR. ROBLES: Yes. None of the wells 6 that we're talking about the soil vapor will be 7 off-site, it's all on-site because that's where all 8 the soils are at. 9 But understand also, everybody, that 10 we revisit this periodically. Every five years we 11 go back and revisit, so that we make sure that we're 12 doing the right thing with the regulators. 13 Any other questions? 14 (Inaudible.) 15 Oh, because of the comments on 16 Saturday -- I thank the lady -- we are planning to 17 have a third meeting. And we want to have it in 18 Altadena. And what we want to do is probably -- 19 we're trying to set it up, I haven't talked to 20 anybody over there. We'll probably host it in the 21 middle of June, so that we can make sure that the 22 whole community has a chance. I didn't know this, 23 and that was one of the things why we have public 24 meetings, is that the folks in Altadena can't make 25 it over here at night because there is no bus</p>

1 service. So we want to know if there's any concerns
2 out there.

3 So if you get another proposed plan in
4 the mail, please don't get angry at us. We're just
5 announcing that we're going to have a third meeting
6 in Altadena so that we can make sure that we have
7 the public comments in there. We want to solicit
8 comments. We want to make sure that the public is
9 comfortable with this. We might have better
10 suggestions and that's what we want to shoot for.

11 So we want to thank the lady on
12 Saturday, that was a good comment that we had. And
13 we have talked to some of the purveyors, and they're
14 willing to put it in their billings. We're going to
15 work on that, as well.

16 MR. SAUNDERS: All right. Quick
17 feedback from Saturday's meeting.

18 What other questions do we have?
19 Comments. Feel free to come on up to the mike and
20 express your opinions, your comments, your questions
21 at this time.

22 MR. CLAIRDAY: Good evening. John
23 Clairday with the -- and the last name is spelled
24 C-l-a-i-r-d-a-y. I'm a board member with the
25 Lincoln Avenue Water Company, which is a neighbor,

1 the site and for the types of soils that we have at
2 the site.

3 Now, what we do to ensure that that is
4 the most effective technology for the site is,
5 No. 1, we conduct a regular monitoring program of
6 the soil vapor around the site, to see and actually
7 watch, we've actually seen -- some of the data is in
8 the back of the room. You can watch the chemicals
9 that have been removed slowly disappear from the
10 soil, and we do that on a very regular basis. And
11 during our pilot study, we actually did it monthly
12 to see what the effect of the system is on the
13 chemicals in the soil.

14 Now, what we do for the long-term is
15 once we've signed our record of decision and once we
16 install the system throughout the site, we do --
17 again, we have a regular monitoring program to see
18 how effective it is, and then at least every --
19 just -- every five years we do what is called a
20 five-year review, where the regulatory agencies,
21 NASA, sits down, looks at the results, how well the
22 technology is looking, looks at new, possible
23 innovative technologies if the technology we've
24 chosen was not as effective as we thought it would
25 be, and basically says, "Are we still doing the best

1 right next door. We appreciate the opportunity to
2 come over here and -- for this meeting.

3 Just a coup- -- one statement and then
4 one question, as well. One -- and I don't think
5 this is inconsistent with what Mr. Robles said, but
6 we already do have a groundwater problem, and I
7 think that's been recognized, but I just wanted to
8 emphasize that, since it's an area that we're
9 interested in.

10 And then a second one. I'm wondering
11 about the effectiveness of this extraction program.
12 Is it 100 percent effective? How do you know how
13 well you're doing, and is the testing continue
14 throughout that term?

15 And then, also, if it's not 100
16 percent effective, does that mean that a certain
17 percentage will ultimately reach groundwater and
18 contaminate it?

19 MR. ZUROMSKI: I'll answer your
20 question.

21 First of all, every technology that we
22 attempt, we choose because of -- because it is the
23 most effective. 100 percent effective, I don't
24 think we could guarantee, but it is the most
25 effective technology for the types of chemicals at

1 thing that we can do to remove the chemicals from
2 the environment?" And that's generally how we
3 monitor how effective the technology is over the
4 long-term.

5 Now, if you look the back of the room,
6 we have an estimate, I think -- I can't quite read
7 it from here -- but it looks like it's about
8 three -- little over \$3 million. That's a present
9 value cost of what it's going to take to operate the
10 system, from our estimate, one to five years and
11 then monitor it for 25 years after that. So we do
12 continuously monitor this throughout the entire
13 period, to make sure that what we've done was the
14 best thing for the site.

15 As far as a level that we remove the
16 chemicals to, that level is determined during the
17 remedial or -- excuse me -- the record of decision,
18 where we -- as Mark said, we all sit down and agree
19 to a level that we will clean the site to. And
20 that's based on all the regulatory requirements that
21 we're required to make.

22 MR. RIPPERDA: And on an ongoing --
23 you know, the groundwater, you know, they're also
24 responsible for. So over time, you know, whatever
25 the record of decision for the groundwater remedy

<p style="text-align: right;">Page 30</p> <p>1 has, that will include monitoring and clean up of 2 the aquifer. So they're removing the source to 3 protect it from going into the aquifer in the 4 future. 5 But for the contaminants that have 6 already gotten into the groundwater NASA will, of 7 course, still be responsible for that in the 8 future. 9 MR. SAUNDERS: Thank you. 10 Any other questions, comments? Please 11 feel free to take this opportunity. 12 Thank you. 13 MS. COMPTON: My name is Cynthia 14 Compton, C-o-m-p-t-o-n. I'll try to be easier on 15 you. I gave you lot of comments Saturday and I 16 appreciate your response to my comments. 17 My first comment is that two minutes 18 is not enough time for my questions and my comments. 19 MR. ZUROMSKI: Can we give her a 20 little extension? 21 MR. SAUNDERS: Well, again, she can -- 22 we can give her more time after the other folks have 23 responded -- 24 MS. COMPTON: There you go. 25 MR. SAUNDERS: -- she can come back</p>	<p style="text-align: right;">Page 32</p> <p>1 employees are here, but the actual e-mail didn't say 2 anything about the meeting, it just said the 3 proposed plan is available at a web site. And she 4 had a great comment that the actual e-mail needs to 5 announce when and where the meetings are. So we'll 6 make sure that NASA -- any e-mail that goes out in 7 the next week or two for the next meeting has right 8 in the text of the e-mail that this is a public 9 meeting, when and where it will meet. 10 And he wants me to talk about soil 11 particles, also. (Laughter.) 12 MS. COMPTON: He's already responded. 13 MR. RIPPERDA: Yeah. 14 So her question pertains to the fact 15 that in the slides it almost always said "soil 16 vapor," it didn't say "VOCs in the soil," it always 17 said "soil vapor," and that's because the actual 18 measurements we take are of the soil vapor. 19 When the contaminants are 50 feet, 100 20 feet below the surface, you actually have to drill a 21 bore hole to get down to it. And the act of 22 drilling that bore hole, the heat and the air that 23 you have to inject, bring the cuttings, the dirt 24 back up out of the hole, basically blow away all the 25 VOCs that you're trying to sample for. So you can't</p>
<p style="text-align: right;">Page 31</p> <p>1 for three minutes. 2 MS. COMPTON: Okay. 3 Quickly. I know that there was some 4 testing done in Building 107, in the basement, for 5 the air atmosphere, and I wonder if that has turned 6 into one of the 37 permanent test points. 7 Another question I have is: I'm 8 interested in a record of the public notices that 9 were sent out, in the newspapers and mailings, and 10 I'm still having a little trouble distinguishing the 11 difference between contamination in the particles of 12 soil versus contamination in the vapors. And if 13 maybe you could clarify that a little bit with me. 14 And the other thing is, that my -- 15 same comments I made Saturday. I think we, the 16 public, deserve a little bit earlier notice -- and 17 thank you for offering another meeting, I'm going to 18 put that in my official comments. But a little 19 earlier notice and something to the JPL employees 20 that says "Public Meeting," maybe, in the subject 21 title. 22 MR. RIPPERDA: I'm going to say one 23 thing to the last thing. 24 She showed me a copy of the e-mail 25 that went out, and -- I don't know how many JPL</p>	<p style="text-align: right;">Page 33</p> <p>1 take a soil sample very well from 100 feet deep and 2 analyze that soil for how much contamination it has 3 in it. 4 So, instead, what you do is you drill 5 your bore hole and then you let it sit for a few 6 weeks, reach equilibrium, and then you suck some air 7 out. And because the VOCs are attached to the soil 8 particles and all the soil around the bore hole, 9 they evaporate naturally and they'll fill the bore 10 hole. And as you suck the air out, you see "Oh, 11 we've got VOCs in our air that we're sucking out," 12 so, therefore, we know that there's VOCs in the soil 13 of this location. You can do kind of rough 14 correlations between the amount that's in the soil 15 vapor you're measuring to what's actually in the 16 soil. 17 So it's just -- it's the physics of 18 not being able to measure the actual particles of 19 soil, we have to do a correlation between the soil 20 vapor and the soil. So we're always going to talk 21 about soil vapor, even though what we're really 22 concerned about is what's attached to the soil. 23 Because what's attached to the soil is what gets 24 dissolved in rain water as it infiltrates down. 25 That's what ultimately brings it to the drinking</p>

<p style="text-align: right;">Page 34</p> <p>1 water aquifer. 2 MS. COMPTON: But when you're sucking 3 it and cleaning -- 4 MR. RIPPERDA: Right. So when we're 5 sucking, we're sucking the vapor out. But as we 6 suck the vapor out, the particles of the chemicals 7 that are attached to the soil are always 8 evaporating. As we suck more air, more particles 9 evaporate off the soil and, relatively quickly, by 10 keeping on sucking, you have sucked most of the 11 particles of contamination out. 12 MR. ROBLES: I mean, you asked about 13 the building. I'm not familiar with that. I know 14 that samples have been taken. 15 MR. RIPPERDA: You have to talk louder 16 in your answer, for court reporter. 17 MR. ROBLES: Oh. You were saying 18 about which building again? 19 MS. COMPTON: 107, I think. 20 MR. ROBLES: 107. It must be in our 21 plan. I don't remember it exactly. I can get back 22 to you with that information. 23 MR. ZUROMSKI: We'll have to respond 24 to that. 25 MR. ROBLES: Yeah, we'll have to</p>	<p style="text-align: right;">Page 36</p> <p>1 started May 7 and runs through June 11. 2 Keep in mind, the comments and 3 questions asked tonight, as well as responses, not 4 only the ones given here but, furthermore, in-depth 5 responses, answers to your comments and questions 6 will be included in a responsiveness summary which 7 will be included with the ROD into the annual 8 record. 9 Yes. 10 MR. ZUROMSKI: The time period has 11 been extended. 12 MR. SAUNDERS: Okay. You're going to 13 extend the comment period. All right. 14 MR. ROBLES: We're going to extend the 15 comment period past the meeting coming up so, 16 therefore, it's fair for everybody. 17 MR. SAUNDERS: Okay. So instead of 18 waiting for the public to request an extension, 19 we've already extended the comment period at this 20 time. 21 Do we have a date as of yet? Or that 22 will be -- 23 MR. ROBLES: It will be in the -- 24 MR. SAUNDERS: It will be in the 25 information sent out to the public, as to how long</p>
<p style="text-align: right;">Page 35</p> <p>1 respond to that. 2 MS. COMPTON: I'd appreciate it. 3 MR. ROBLES: I don't -- it's not 4 familiar to me within the document, so we'll have to 5 get back with you. 6 MR. SAUNDERS: Thank you. 7 What other questions, comments do we 8 have? I'm sure there's plenty of other folks out 9 there that have some feedback for us. Please feel 10 free to come up to the mike and provide your 11 comments, questions. 12 If there's no other comments or 13 questions, ma'am, if you'd like to come back up and 14 get your next three minutes in, you're welcome to 15 come back up at this time. 16 MS. COMPTON: I'm all set. 17 MR. SAUNDERS: Okay. 18 Well, if there's no other questions or 19 comments, we're going to wrap this up in a moment. 20 I want to thank you for attending, encourage you to 21 review and comment on the proposed plan, and there's 22 copies on the back table of the proposed plan. 23 The final decision regarding cleanup 24 will be made after public comments have been 25 received and considered. The public comment period</p>	<p style="text-align: right;">Page 37</p> <p>1 the comment period has been extended. 2 And if you could put that slide back 3 up? 4 As has already been mentioned, if 5 there is any further comments, questions, the last 6 slide that has Peter's address, feel free to send 7 your comments, your questions, mail them, e-mail 8 them to Richard at this address. It's also included 9 in the proposed plan fact sheet. And we look 10 forward to any further feedback that you have may 11 have at this time. 12 And before we close, I will give you 13 one last chance. If there's any other comments or 14 questions. 15 If not, thank you for coming and have 16 a good evening. 17 18 19 20 21 22 23 24 25</p>

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4 CERTIFICATE
5

6
7 I, LESLIE A. MAC NEIL, RPR, CSR
8 No. 7187, in and for the State of California, do
9 hereby certify:

10 That the foregoing ____-page
11 proceedings were taken down by me in shorthand at
12 the time and place stated herein, and represent a
13 true and correct transcript of the proceedings.

14 I further certify that I am not
15 interested in the event of the action.

16 WITNESS my hand this ____ day of
17 _____, 2001.
18
19

20
21 _____
22 Certified shorthand
23 reporter in and for the
24 State of California
25

1
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3
4
5
6 PUBLIC MEETING AND PUBLIC COMMENT PERIOD
7 COMMENTS AND QUESTIONS GIVEN TO COURT REPORTER
8 MONDAY, MAY 14, 2001
9 8:45 P.M.
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11
12
13
14
15

16 NASA JET PROPULSION LABORATORY
17 4800 OAK GROVE DRIVE
18 PASADENA, CALIFORNIA
19
20
21
22
23
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25

PASADENA, CALIFORNIA
MONDAY, MAY 14, 2001; 8:45 P.M.

BY TERRI FORMICO:

Is there any intent to do an anonymous survey of LaCanada residents and employees at JPL of incidences of tumors, cancers, unusual cancers, deaths due to cancer over the last 20 years? That's my question.

Also, employees of La Canada, as well. People who have worked here at least 10 years or so.

The survey should be offered to all members of the community, all employees of the community of both JPL and La Canada, not a random or public event to gather data.

CERTIFICATE

I, LESLIE A. MAC NEIL, RPR, CSR
No. 7187, in and for the State of California, do hereby certify:

That the foregoing ____-page proceedings were taken down by me in shorthand at the time and place stated herein, and represent a true and correct transcript of the proceedings.

I further certify that I am not interested in the event of the action.

WITNESS my hand this _____ day of _____, 2001.

Certified shorthand
reporter in and for the
State of California

PUBLIC MEETING AND PUBLIC COMMENT PERIOD

ELIOT MIDDLE SCHOOL
ALTADENA, CALIFORNIA

WEDNESDAY, JUNE 20, 2001

6:00 P.M. TO 9:00 P.M.

Reported by:

Vickie Blair

C.S.R. No. 8940, RPR-CRR

<p style="text-align: right;">Page 2</p> <p>1 ALTADENA, CALIFORNIA; WEDNESDAY, JUNE 20, 2001 2 6:00 P.M. 3 ---000---</p> <p>4</p> <p>5 MR. SAUNDERS: Good evening. Can you hear 6 me?</p> <p>7 Welcome to Eliot Middle School. Thank 8 you for taking the time to attend our meeting this 9 evening. It's a rather hot evening, as you can tell. 10 I am going be a little informal and go without my 11 sports coat this evening, and I invite all of you to 12 relax. In fact, while I know you all have 13 comfortable seats back there right now, in order to 14 get a little more intimate atmosphere, if you don't 15 mind all moving up a little bit and we'll have a 16 little bit better contact and dialogue. If everybody 17 just moves up a little closer, I really would 18 appreciate that. Plenty of seats to choose from.</p> <p>19 My name is Lee Saunders. I'm an 20 Environmental Public Affairs Officer with the U.S. 21 Navy and a facilitator for tonight's meeting about 22 the proposed plan to select a remedy to clean up 23 soils at the National Aeronautic Space 24 Administration, Jet Propulsion Laboratory, located 25 nearby here in Pasadena.</p>	<p style="text-align: right;">Page 4</p> <p>1 as follows: This evening's format will consist of 2 presentations by our representatives about the 3 proposed plan and remedial alternatives, followed by 4 a formal comment session where you, the community, 5 can provide us with the comments and questions.</p> <p>6 I'm going to ask you to please hold 7 your questions until the presentation has been 8 completed. Once we've heard from all the presenters, 9 we will open the floor to questions and comments. 10 You may want to use the comment sheets that you 11 picked up in the back while you hear the presentation 12 to write down your questions so they stay fresh in 13 your mind.</p> <p>14 To ensure that everyone that wishes to 15 make a comment or ask a question has a fair and equal 16 opportunity to do so, we ask that you limit your 17 comments and questions to five minutes. At the end 18 of that time, please take your seat. If you have not 19 finished your remarks, you may continue for another 20 five-minute period after we've heard from all the 21 other speakers.</p> <p>22 We have a court reporter over here to 23 my left, your right, this evening; so we ask you to 24 please state your first and last name and please 25 spell your last name before you begin your comments</p>
<p style="text-align: right;">Page 3</p> <p>1 Prior to this meeting, you had the 2 opportunity to speak with NASA, federal, local lead 3 and regulatory agency representatives on a one-to-one 4 basis about the proposed cleanup actions.</p> <p>5 During this portion of the meeting, 6 you, the community, can provide questions and 7 comments to these representatives and their agencies 8 on the proposed plan. These comments and questions 9 will be included in a meeting transcript and become 10 part of the final decision made for soil cleanup at 11 JPL. Representing the agencies responsible for the 12 cleanup and talking to you about the proposed plan 13 and its remedial alternatives are agency 14 representatives who will each introduce themselves 15 starting down here.</p> <p>16 MR. YOUNG: David Young with the Los Angeles 17 Regional Water Quality Control Board.</p> <p>18 MR. RIPPERDA: I'm Mark Ripperda from the 19 U.S. Environmental Protection Agency.</p> <p>20 MR. ROBLES: Peter Robles from NASA.</p> <p>21 MR. ZUROMSKI: Hi. I'm Richard Zuromski with 22 the Naval Facilities Engineering Command.</p> <p>23 MR. SAUNDERS: Can everybody hear all of 24 them? No problems? Okay, good.</p> <p>25 Ground rules for tonight's meeting are</p>	<p style="text-align: right;">Page 5</p> <p>1 for the record.</p> <p>2 If you do not wish to provide verbal 3 comments or questions, you may also submit your 4 comments and questions in writing. These comment 5 sheets that I mentioned are available on the tables 6 in the back for those of you in the audience that 7 would prefer to submit them by this alternate 8 method.</p> <p>9 For those of you wondering why the 10 U.S. Navy is involved with the environmental cleanup 11 of the NASA facility, the explanation is fairly 12 simple. In 1999, NASA and the Naval Facilities 13 Engineering Command, more commonly known by the 14 acronym NAFAC, reached a memorandum of agreement 15 establishing the roles and responsibilities that 16 state NASA may procure environmental engineering and 17 consulting service from NAFAC and its subordinate 18 commands.</p> <p>19 In late 1999, NAFAC became heavily 20 involved in providing environmental services to NASA 21 JPL. Peter Robles, remedial project manager for 22 NASA, is our first presenter.</p> <p>23 Peter.</p> <p>24 MR. ROBLES: Good afternoon. I'm Peter 25 Robles from NASA, and I wanted to just go over the</p>

<p style="text-align: right;">Page 6</p> <p>1 site description. Here is a list of the participants 2 with the exception of one person, Richard Gebert with 3 the State of California Department of Toxic 4 Substances Control. Everyone else is here. 5 We are going to do a summary 6 presentation, and the first thing we want to do is a 7 site description, so we will go to that. 8 The site called JPL has been active 9 since 1939. And it was basically under the auspices 10 of the Corps of Engineers with the Army, and Cal Tech 11 was the organization; JPL was operating the site. 12 In the '40s and '50s, the way that 13 most disposal was done on-site was through seepage 14 pits, and this was the accepted practice at the 15 time. When NASA took over in the late '50s, early 16 '60s, NASA replaced the seepage pits with sewage 17 systems, and took out the seepage pits, which we 18 believe are the main causes of the migration of 19 chemicals in soils. 20 In '92, the site was put on the 21 SuperFund list, and at that time it started with the 22 SuperFund process, which will be explained a little 23 later. 24 Currently, the site meets all of the 25 federal, state, and local requirements. And I</p>	<p style="text-align: right;">Page 8</p> <p>1 through the SuperFund process, and I will turn it 2 over to EPA, mark Ripperda. 3 MR. RIPPERDA: Thanks, Peter, and thanks 4 everybody for coming out tonight. 5 Peter mentioned that this is a 6 SuperFund site, and that leads to the question: What 7 is SuperFund and what does it mean to be a SuperFund 8 site? A little quick history. Back in the 1980s, 9 congress passed a law that authorized a tax on the 10 chemical industry. That money all remains in a trust 11 fund which is called SuperFund. It's several billion 12 dollars, and that money can be used by EPA to clean 13 up toxic sites, and Congress also gave the EPA 14 authority to oversee existing either government 15 agencies or private companies that have 16 contamination. 17 But EPA will only get involved if the 18 site goes through a ranking process and it scored 19 badly enough that it's listed on the national 20 priorities list, which is just the national list for 21 all the sites that are SuperFund sites. 22 So once the site goes through that 23 process and it becomes a SuperFund site, if it's an 24 existing site like JPL, they have to go out, take 25 soil samples, groundwater samples, evaluate how bad</p>
<p style="text-align: right;">Page 7</p> <p>1 reiterate that at the time in the past those methods 2 were acceptable. We know better now that that was 3 not the best way to do that. But today, we take care 4 of our waste. It's usually used up in the process, 5 basically destroyed in the process, and very little 6 gets disposed of, so we have regulatory controls on 7 how we handle our chemicals on the facility. 8 Now, the site itself, tonight what we 9 want to talk about is Operable Unit Number 2, which 10 consists of what we call the vadose zone, which is 11 from surface level down to about 200 feet just above 12 the water table. Where our main concern is are the 13 50 feet to 200 feet under the ground where we have 14 found chemicals from the past are still there in the 15 soils. This creates a potential source of future 16 migration of chemicals into groundwater, and so 17 tonight we want to focus on how to alleviate the 18 vadose zone or the soil located in that area. 19 NASA intends to address in the future 20 groundwater, hopefully in another year, on what we 21 want to do with the chemicals that are in the 22 groundwater. But for tonight we want to work on 23 OU-2, and get your comments or a recommendation of 24 what way to deal with this site for cleanup. 25 And now what we wanted to do is go</p>	<p style="text-align: right;">Page 9</p> <p>1 the problem is, what chemicals are there, how the 2 chemicals got there. We're supposed to interview old 3 employees and neighbors around the site. And from 4 that they get a conceptual model, a picture of where 5 the chemicals are, where they came from, where 6 they're going to. And that's called the remedial 7 investigation and a feasibility study portion. 8 That's what JPL just recently completed. So they 9 know where the chemicals are; in this case we're 10 talking about soils. 11 And the feasibility study, they study 12 how best to clean it up, and that's called the 13 adjustment period. And now they're in the proposed 14 plan and public comment period where they're going to 15 say, "This is what we think the problem is, this is 16 what we're going to do about it, and what do you 17 think?" 18 So from there, they go to the Record 19 of Decision, to the actual legal document, after 20 public comments have been received or responded to. 21 Then the regulators, such as the State of California 22 Regional Water Quality Control Board, the State of 23 California Department of Toxic Substances Control, 24 and EPA, these are the three regulatory agencies. If 25 we all buy off on the proposed plan, they do the</p>

<p style="text-align: right;">Page 10</p> <p>1 Record of Decision, then go on to the remedy 2 implementation. 3 We won't even talk about the agency 4 standards. That's after the site is cleaned up, and 5 that's years from now. But even if the site does get 6 completely cleaned and delisted from the SuperFund 7 list, there still has to be long-term monitoring and 8 review. So in a case like this, you can't call it 9 perpetuity, but they would be required to monitor the 10 water for almost forever. 11 So in this process, the public -- we 12 like to see the public involved as much as possible. 13 So in things like this we're going to try to do a 14 better job in the future of getting information out 15 more regularly, making sure that documents are all in 16 the local libraries and depositories so you can 17 actually look for yourself to see what JPL, what NASA 18 is doing. But tonight we would just love if you have 19 any questions or comments, and either do it at the 20 microphone or write something down, write something 21 afterwards, if you want, but let us know what you 22 think. 23 MR. ZUROMSKI: Hi. My name is Richard 24 Zuromski. I'm with the Naval Facilities Engineering 25 Command, and I'm going to talk to you tonight about</p>	<p style="text-align: right;">Page 12</p> <p>1 and Freon 113. Some of these compounds, especially 2 carbon tetrachloride, were used to clean, as Peter 3 mentioned earlier, the inside of rocket motors back 4 in the '30s, '40s, and '50s, a lot of the work that 5 they used to do here at JPL. However, that work does 6 not happen here at JPL anymore. 7 Part of the risk assessment was a 8 human health risk assessment that showed that there 9 were no risks above regulatory limits associated with 10 exposure to soils or soil vapor at the JPL site. The 11 primary reason for this was that the chemicals that 12 we're talking about are more than 50 feet below the 13 ground surface, so exposure to humans is very much 14 unlikely. 15 However, as Peter mentioned earlier, 16 there is a risk that these chemicals will continue to 17 migrate through the soils to the groundwater table, 18 and so that's what we're concentrating our efforts on 19 here tonight is removing these chemicals from the 20 soils before they reach the groundwater table. The 21 technical term for that is source removal, as again 22 protecting the groundwater from the chemicals that 23 are in the soil. 24 Now, we are currently studying how to 25 remove the VOCs that have reached the groundwater</p>
<p style="text-align: right;">Page 11</p> <p>1 site assessment and investigation activities that 2 were done at JPL. 3 And before I start, I was just 4 reminded to remind you here tonight that the public 5 comment period for JPL has been extended through 6 July 11th. So I just wanted everybody to know that 7 your comments, if you don't get them in tonight or 8 you don't want to do them in front of everyone 9 tonight, please get your comments in to us by mail or 10 by E-mail by July 11th. 11 First I want to talk about the 12 remedial investigation. From 1994 through 1998, we 13 conducted a remedial investigation at JPL. During 14 that time, in over nine different sampling events, we 15 took samples at 45 soil vapor locations, 35 soil 16 bores, and three test pits. Now, 37 of those soil 17 vapor monitoring locations are now part of a regular 18 monitoring program that we conduct at the JPL site. 19 The samples that we took from 1994 20 through 1998 identified the extent of the chemicals 21 in the soils and the soil vapor under JPL. The 22 results showed that there were elevated levels of 23 four volatile organic compounds beneath and in the 24 soils at JPL. Those four compounds were carbon 25 tetrachloride, trichlorethene, 1,1-cichloroethene,</p>	<p style="text-align: right;">Page 13</p> <p>1 table; but that's going to be the subject, as Peter 2 mentioned earlier, of a future meeting probably, in 3 early 2002. However, there is no risk from VOCs in 4 the groundwater because the regulatory agencies 5 mandate -- your water carriers or those who deliver 6 your drinking water to you have to meet very, very 7 strict regulatory requirements. But, again, 8 tonight's meeting is focused on source reduction, 9 removing the chemicals from the soil. 10 Now, this graphic shows the extent to 11 which VOCs were detected in soil vapor at the JPL 12 site. Now, the extent of the VOCs in the soil there 13 are the extent to which any detection of VOCs were 14 found at the site from the most minuscule all the way 15 up to the highest levels, which are concentrated in 16 the north central part of the site. But based on the 17 results of the remedial investigation and our ongoing 18 soil vapor monitoring program, we found that the VOC 19 plume has not migrated off the site, but does 20 encompass roughly 45 acres on JPL. 21 So based on the analysis that we did 22 in the remedial investigation, the remedial objective 23 for Operable Unit 2 vadose zone soils is to prevent 24 the VOCs from migrating to the groundwater or, again, 25 what we're calling source removal.</p>

<p style="text-align: right;">Page 14</p> <p>1 To meet this objective, we evaluated 2 several alternatives, and this was done, in what Mark 3 Ripperda talked about earlier, a feasibility study. 4 Of the alternatives, two were 5 selected for further detailed evaluation where we go 6 through nine different criteria and evaluate each of 7 the technologies in that nine criteria, and those 8 were the ones that were in the proposed plan mailed 9 to the public and is also available on the table in 10 the back. 11 The first of these is called "No 12 Further Action." This is a default alternative that 13 is mandated by Congress, and it's the alternative 14 that all other alternatives are compared against. It 15 would really only consist of continuing our ongoing 16 soil vapor monitoring program at the JPL site, and 17 any incidental natural degradation of the chemicals 18 in the soil. 19 The second, soil vapor extraction with 20 granular activated carbon treatment, would involve 21 installing up to five soil vapor extraction wells and 22 systems to remove the chemicals from the soil vapor 23 before they reach the groundwater. 24 So to help us evaluate the 25 alternatives, we conducted a pilot test of the soil</p>	<p style="text-align: right;">Page 16</p> <p>1 released from the system. The chemicals that remain 2 in the carbon are then taken off-site and recycled, 3 and the new carbon is brought into the system as 4 needed. 5 So based on our analysis, alternative 6 one, no further action, wasn't chosen because it did 7 not adequately prevent migration of the VOCs to 8 groundwater; therefore, the proposed alternative 9 method is soil vapor extraction. 10 Soil vapor extraction would be used to 11 reduce the migration of the VOCs to groundwater. The 12 advantages to using soil vapor extraction are, first, 13 it removes and actually reduces the amount of VOCs in 14 the soil and soil vapor. 15 Secondly, it works very, very well in 16 the types of soils that we have at JPL, which was 17 shown during our pilot study. 18 Third, again, it protects the 19 groundwater from further migration of these 20 chemicals. 21 Fourth, it's very simple to operate 22 and fairly inexpensive, as well. 23 Fifth, the treatment period is 24 relatively short, probably from one to five years. 25 Now, since this soil vapor extraction</p>
<p style="text-align: right;">Page 15</p> <p>1 vapor extraction technology. During the pilot test 2 in over 14 months of operation we removed over 200 3 pounds of chemicals from the soil. And the operation 4 of the extraction system continues to date. And 5 since it has been so successful, and we had a lot of 6 good data and good results from that, we're going to 7 discuss that in a little bit more detail here in the 8 next slide. 9 This is a conceptual diagram of how 10 soil vapor extraction works. First, as you can see, 11 there are VOCs which are the chemicals that came from 12 the seepage pits that are in the soil and the soil 13 vapor. Now, these VOCs from the past disposal 14 practices are then drawn by a vacuum through the 15 well -- over to the right -- into the well and are 16 basically just like a vacuum; they're sucked out of 17 the soil and the soil vapor into that well and then 18 pulled aboveground by the pump into the vapor 19 treatment system. 20 The VOCs are then sent through the VOC 21 treatment system, which is comprised of granular 22 activated carbon. The activated carbon basically 23 absorbs -- what we would technically calls adsorbs -- 24 the chemicals in the carbon and then holds them 25 inside the vapor treatment system and clean air is</p>	<p style="text-align: right;">Page 17</p> <p>1 technology has all these qualities, and is so 2 effective at sites very similar to JPL, it's one of 3 the best and most accepted technologies by the EPA 4 and the state regulatory agencies. Therefore, the 5 EPA gives this technology the term "presumptive 6 remedy," and soil vapor extraction is the presumptive 7 remedy that we're using here for Operable Unit 2. 8 So based on the soil vapor data and 9 the soil extraction on the site and ongoing 10 monitoring program of the soil vapor at the site, 11 NASA proposes soil vapor extraction as the proposed 12 alternative for Operable Unit 2. 13 Lee. 14 MR. SAUNDERS: Thank you. We're now open to 15 comments and questions from you. As a quick reminder 16 to make sure that all participants' questions or 17 comments receive equal treatment, please limit your 18 comments or questions to five minutes. We also ask 19 that you please state your first and last name and 20 spell your last name for the court reporter. 21 In regards to basic information up 22 here for people to contact afterwards if you do not 23 want to provide any questions or comments for you 24 tonight for you to send the questions or comments 25 to.</p>

<p style="text-align: right;">Page 18</p> <p>1 Do we have any speakers tonight that 2 would like to ask any questions or provide any 3 comments? 4 MR. RIPPERDA: The two microphones. 5 MR. SAUNDERS: And please come up to the 6 microphones so everyone can hear you. We have one up 7 here and one back here. This is a great opportunity 8 for you to provide feedback for us. This is a very 9 important process. 10 Yes, sir. 11 MR. CRIPPEN: Hi. I'm Bob Crippen. I'm a 12 JPL employee. I also live a couple blocks from the 13 JPL property in La Canada. 14 MR. SAUNDERS: Sir, please spell your last 15 name. 16 MR. CRIPPEN: Certainly. C-r-i-p-p-e-n. 17 My question relates to the topography 18 at the site. You say that the VOCs are 50 feet deep, 19 but the property across the site is more than 50 20 feet. How does the depth relate to the property? 21 Do the VOC's come closer to the surface as you go 22 down? 23 MR. ROBLES: Fifty feet measured from the top 24 of the topography. 25 MR. CRIPPEN: But you're on a hillside.</p>	<p style="text-align: right;">Page 20</p> <p>1 that's where most of the seepage pits were. We found 2 the old bricks in the seepage pits in some places. 3 Some of them have been taken out over the years. We 4 went and did some investigation. But those pits went 5 about, I'd say, as far down as 30 feet. They were 6 pits. And the key was the chemicals migrated through 7 the surface of it to the ground, sank down below. 8 But that's where all the seepage pits were, in the 9 northeast portion of the land. 10 MR. CRIPPEN: Is a seepage pit generally near 11 the -- 12 MR. ROBLES: Yes, yes, generally near the 13 east gate. 14 MR. CRIPPEN: Another question. Your 15 distribution map looks like the distribution went 16 pretty far to the west of the map. 17 MR. ROBLES: Oh, mostly south. Mostly south 18 because there were some buildings that still were 19 doing some work. It was not just the seepage pits 20 only. There was other work going on in other 21 buildings closer to where the library was -- where it 22 is now. There was some work done there, as well, and 23 you see less as you go there. And the water table 24 rises and causes this [unintelligible] issue within 25 the soil. And that's where the spring came out</p>
<p style="text-align: right;">Page 19</p> <p>1 MR. ROBLES: I know. And we know that the 2 bedrock is to a thousand feet, but what we're saying 3 is that it's below -- wherever the topography is 4 standing, it is not within the first 50 feet anywhere 5 at JPL. It's usually below that, and gets much more 6 higher as you go closer to that 50 feet. And we 7 measured that and wanted to make sure of that simply 8 because we were concerned about exposure to the 9 public. And that's one of the reasons why we tested 10 that first layer all the way through and we sampled 11 the whole -- I know what you're saying. It's 50 feet 12 from the surface wherever the topography is. 13 MR. CRIPPEN: Fifty feet or more is what 14 you're saying? 15 MR. ROBLES: Right, right. In some places, 16 50 feet. If you're on the private road, topography, 17 50 feet down at south gate, that's correct. But 18 it's still -- because it falls down. It just doesn't 19 come to the surface anywhere on that. 20 MR. CRIPPEN: Okay. Another question. Where 21 were the pits and how deep were they? Were the pits 22 more than 50 feet deep? 23 MR. ROBLES: Some of the pits -- first of 24 all, good question. The location was in the north -- 25 I want to say northeast portion of the old farmland;</p>	<p style="text-align: right;">Page 21</p> <p>1 there, so it's not like a point source where you 2 wonder where it came through. 3 MR. CRIPPEN: Recently the sewer system was 4 put into the eastern part of La Canada, and I'm in 5 that area. I live in that area. It's sort of the 6 easternmost part of La Canada. They were putting in 7 a sewer there. And I was talking to the guys when 8 they put the sewer on my street, and I live up on the 9 hill. They said they were going to have -- I didn't 10 follow up on this, but when they were putting the 11 sewers [unintelligible] area because the water table 12 was only about 10 feet below the surface. That's the 13 part of La Canada that's immediately adjacent to JPL, 14 and you're saying the water table is 200 feet below 15 the surface. 16 MR. ROBLES: Right. We tested it. 17 MR. CRIPPEN: Did you verify it? 18 MR. ROBLES: That's beyond me. 19 MR. SAUNDERS: One thing you have to keep in 20 mind tonight, while you can ask questions and write 21 comments, the purpose is really to take those 22 comments and questions and give you a formal response 23 back. So they can give you just some general 24 responses, but we really can't expect him to give you 25 a formal answer tonight. So they will give you those</p>

<p style="text-align: right;">Page 22</p> <p>1 formal remarks back in the official response. 2 MR. CRIPPEN: Okay. 3 MR. RIPPERDA: And, also, there is another 4 hour after this informally. 5 MR. CRIPPEN: That's fair. These are just 6 questions that came up in your presentation, the 7 numbers, the topography, the depth. 8 MR. SAUNDERS: And you will definitely get 9 answers back in detail. 10 MR. CRIPPEN: Thanks. 11 MR. SAUNDERS: Thank you. 12 Who else would like to ask some 13 questions tonight or provide some comments to us? 14 Great opportunity, a great time to do this. Please 15 feel free to come up. Thank you. 16 MS. COMPTON: Hi. I am Cynthia Compton, 17 C-o-m-p-t-o-n. I am also a JPL employee. Most of 18 you know me. I've been at all three meetings. I 19 thank you for increasing your comment and question 20 period to five minutes, although I have lots of 21 questions this time. You've incorporated the answers 22 to my questions in most of your presentation. 23 Back to the seepage pits. I heard you 24 say that they took out the seepage pits, and I'm not 25 really sure if that is technically correct about all</p>	<p style="text-align: right;">Page 24</p> <p>1 Also, you mentioned afterwards when 2 you're delisted from the NPL list, the long-term 3 monitoring and review. I'd like to get some 4 quantification of what does that mean, long-term 5 monitoring? Do they come out and look at it once 6 every five years or once every six months? I'm 7 looking for some quantification there. 8 And then let's see here. 9 And also something about the EPA 10 presumptive remedy, I'd like a clearer definition of 11 what does that mean. And I guess that's pretty much 12 most of my questions. 13 MR. RIPPERDA: I'll answer some of the 14 questions, and then we'll get back to that -- so your 15 last question was about presumptive remedies. It's 16 not really a legal term -- it's more of a working 17 term -- where certain types of contamination are seen 18 at almost all the SuperFund sites around the country; 19 and, you know, over the last 20 years, multiple 20 things have been tried. And when you get down to 21 using the same technology over and over again, we 22 have volatile organic compounds in the soils, one 23 tried and true technology is soil vapor extraction. 24 So another presumptive remedy would be treating, 25 processing plants, and a few other industries have</p>
<p style="text-align: right;">Page 23</p> <p>1 seepage pits because from what I understand, some of 2 them are under the parking lots, some of them are 3 under buildings, and some of them are literally 4 undiscovered and some of them may even be lost. So I 5 just want to bring that out. Is there a plan to go 6 back and identify as many seepage pits as possible 7 and maybe pulling everything out, pulling them out, 8 like you said? 9 Another question I have is the -- the 10 plume, also. When you talked about the vadose zone, 11 is that the entire area from the surface to the 12 groundwater? Is that the definition of vadose zone? 13 Okay. 14 And then I just want to comment again 15 that the feasibility study is not at the Altadena 16 Library. I went there after the first meeting, and 17 it wasn't there. I mentioned this. And I went there 18 again last night. And there are change pages there, 19 but the actual feasibility study is not there. And I 20 really don't want everyone to have to go to Pasadena, 21 having to go out to La Canada, having to go to JPL to 22 chase this down. It needs to be provided now. Some 23 of the answers to some of my questions last meeting 24 were -- it's in the feasibility study, so I need to 25 go over there and find the answers.</p>	<p style="text-align: right;">Page 25</p> <p>1 technologies where we always use the same thing over 2 and over again. And when something has been called a 3 presumptive remedy by EPA, it means that the people 4 who are actually spending money -- they skip over a 5 lot of the studies comparing alternative studies and 6 then just cut to the chase, like they did here. 7 Your other question about long-term 8 monitoring and the future aftermath after we've 9 cleaned it all up, we're done. We don't just walk 10 away. That's where EPA and the State of California 11 says, "You still have to do long-term monitoring to 12 be absolutely sure you got it all." There's 13 something called the five-year review, so every five 14 years they have to write a comprehensive report to 15 summarize everything. That doesn't mean that they 16 just monitor every five years. So when they actually 17 implement the remedy and the remedy is completed, 18 they then have to negotiate between them and us how 19 much monitoring they're going to do, which 20 groundwater wells are going to be monitored, how 21 often they're going to monitor them. And it usually 22 works out to be something like every six months. 23 Several water purveyor wells will be 24 monitored, and those are all part of the 25 [unintelligible]. I'm not sure that that's being</p>

1 negotiated, but it's usually once every six months.
 2 MS. COMPTON: Is that in the public
 3 depositories?
 4 MR. RIPPERDA: Yes. All of that information
 5 is publicly available.
 6 You asked about the seepage pits, and
 7 that's more a question for the NASA guys.
 8 Is there anything else that I can
 9 answer? No?
 10 Oh, and the incident with the library,
 11 I agree with you. I hate to hear that it's not there
 12 because, you know, we're absolutely supposed to make
 13 sure that they're out there. And the field checking
 14 person -- so if it's not there in the future, we'll
 15 get it there.
 16 MR. ROBLES: And I apologize for that. There
 17 are people who love to take them home, so we have to
 18 constantly be checking, so -- that's not an excuse.
 19 Just to get back to what Mark said
 20 about the sampling, one of the things that we had to
 21 do is submit to them a sampling plan of how we're
 22 going to sample long term. I will tell you, I have
 23 yet to see a site delisted, you know. So a site is
 24 usually studied, monitored, and usually they start
 25 monitoring every quarter, and if they don't find

1 anything, then expanding it and expanding it to six
 2 months. If that's working at the location, those
 3 documents are available to the public because that's
 4 the key. You say, "Well, I want it still to be every
 5 quarter," so those would [unintelligible].
 6 On the seepage pits, the pits that
 7 were taken out, you probably were talking about the
 8 bricks. What we have found is that some of our what
 9 we call civilian structures -- and we compare those
 10 and we find red brick. Those are the old seepage
 11 pits. The plumbing is gone, everything was taken
 12 out, and we find the bricks. There's nothing
 13 connected to them. It's just the old site location.
 14 We have done soil borings and soil
 15 analysis of all that, so we know generally -- we have
 16 pictures -- so we can see generally where the seepage
 17 pits were and all of that.
 18 Some of them are under buildings, but
 19 wherever we have found them, we have done remediation
 20 on them and taken samples to see. And off we go, the
 21 chemicals that were in there we don't see. They've
 22 gone out [unintelligible]. But periodically we'll
 23 come across a seepage pit. So those were kind of in
 24 the office to see what the site looks like.
 25 Any other items that we didn't

1 address? If nothing else, we'll answer you back
 2 formally, anyway.
 3 MS. COMPTON: Right.
 4 MR. ROBLES: Okay?
 5 MS. COMPTON: Thank you.
 6 MR. SAUNDERS: We had two people come in
 7 recently. Just to let you know, we're in a public
 8 comment and question period. This is an opportunity
 9 for you to ask questions and provide comments to us
 10 about the proposed plan. And we have some
 11 microphones around the room for you to come up to the
 12 microphones, state your first and last name, and
 13 please spell your last name for the court reporter
 14 for the record. And, again, these questions and
 15 comments are on the record, and you will get formal
 16 responses, written responses back.
 17 Any other questions or comments,
 18 please feel free to come up to the mike.
 19 Yes, ma'am.
 20 MS. GONZAL: Good evening. My name is
 21 Cynthis Gonzal. I'm a resident of Altadena,
 22 California. Two questions.
 23 MR. SAUNDERS: Certainly. Would you please
 24 spell your last name.
 25 MS. GONZAL: G-o-n-s-a-l. G- as in good

1 -o-n-z-a-l.
 2 MR. SAUNDERS: Thank you.
 3 MS. GONZAL: [Unintelligible.]
 4 In terms of long term, will JPL
 5 actually be monitoring the site or would it be an
 6 outside company or agency doing that?
 7 MR. ROBLES: Could you clarify what you mean
 8 by "monitoring."
 9 MS. GONZAL: In terms of the toxicity levels.
 10 MR. SAUNDERS: You're talking about that the
 11 agency is not doing it themselves?
 12 MS. GONZAL: Yes.
 13 MR. ROBLES: Yes, there are agencies. In
 14 fact, two of them are here. How the SuperFund works
 15 is that all the documents that we produce for our
 16 contractor has to go over to them for review. So we
 17 have U.S. EPA, Department of Toxic Substances, the
 18 State of California, and the Los Angeles Regional
 19 Water Quality Control Board. And they have
 20 contractors, subcontractors, that make a lot of
 21 comments on our documents.
 22 We go through draft, draft finals.
 23 We discuss issues. "Hey, we need more sampling here.
 24 We need more lab analysis. Here we need to drill
 25 another well here." They are very active in the

<p style="text-align: right;">Page 30</p> <p>1 process, and it's not just NASA doing its own thing. 2 We have to coordinate through them. We have 3 quarterly meetings called RPN meetings. We have 4 project management meetings. Those are the meetings 5 where we have working groups that decide on how we're 6 going to do this. They have had them for the last 10 7 years. 8 MS. GONZAL: Okay. Second question. In the 9 printed material where you talk about the risks 10 associated with exposures to chemicals, and you 11 indicated that there were no risks by regulatory 12 standards. 13 MR. ROBLES: Right. In the soils. 14 MS. GONZAL: In the soils. The risk that 15 usually is associated with that, will you be 16 monitoring that aspect, also, as relates to the human 17 element? 18 MR. ROBLES: Yes. They're called MCLs, 19 maximum contaminant levels. And every time we take 20 samples, quarterly take samples and telling where 21 those levels are, and it's also to make sure that 22 they're not coming to the surface. And we're always 23 having to revisit this to make sure that the public 24 health is addressed. 25 MS. GONZAL: What parameters are set for</p>	<p style="text-align: right;">Page 32</p> <p>1 the groundwater without it being treated. But all of 2 the water purveyors, Lincoln Avenue, La Canada, City 3 of Pasadena, if their water levels have contamination 4 above health-based limits set by the State of 5 California or by U.S. EPA, they install -- I think 6 mostly it's carbon treatment around here. And so 7 they treat the water before it gets sent out to 8 anybody in the public. So even though the chemicals 9 are in the groundwater, it's all being treated and 10 taken care of before it's sent out to the public. 11 So even though it's in the 12 groundwater, it's all being treated and taken care of 13 before the water gets out to the public. So now that 14 we say there's no risk from these chemicals, it's 15 because the water purveyors are actually treating the 16 water. 17 MR. SAUNDERS: We really appreciate your 18 comments and questions. Who would like to comment or 19 ask a question next? Ma'am. 20 MS. HIBNER: My name is Sara Hibner. The 21 last name is H-i-b-n-e-r. 22 Actually, I'm talking about reaching 23 the groundwater; however, many of us around here 24 understand about groundwater and the rain basin and 25 all of those kinds of complexities as to how our</p>
<p style="text-align: right;">Page 31</p> <p>1 that? 2 MR. ROBLES: Those are regulatory parameters 3 set by the State of California and the U.S. EPA. 4 MS. GONZAL: Okay. 5 MR. RIPPERDA: Just to clarify that a little 6 bit, most of what we've been talking about 7 [unintelligible] is just in the soils, and that's all 8 on-site at JPL. So in the printed material you have 9 there are no risks from these chemicals. That means 10 there's no risk of exposures to the soils at JPL. 11 But the other component to the whole 12 site is groundwater underneath the site is migrating 13 off-site. We're not really talking about that 14 tonight, but I may as well say a little bit about it. 15 So some of these chemicals have gotten 16 into the groundwater, and that's why NASA is 17 proposing the cleanup of the soil with soil vapor 18 extraction because they don't want to put any new 19 chemicals into the groundwater. It's much cheaper to 20 clean up the soil than it is to clean up groundwater. 21 So the more you take out before it hits the 22 groundwater, the quicker you can clean up the 23 groundwater long term. 24 So the chemicals that are in the 25 groundwater could pose a risk if you actually drank</p>	<p style="text-align: right;">Page 33</p> <p>1 local water is pumped. I think it would be helpful, 2 and in the future when you are discussing 3 groundwater, if you specify that what you are talking 4 about is the rain basin. If there is such a setup by 5 Lincoln Avenue Water that you mentioned or whatever 6 you mentioned, those people that have to live in the 7 area who are informed will be better able to 8 understand exactly what it is you are saying. 9 Thank you. 10 MR. SAUNDERS: Thank you. 11 Who would like to speak next? Any 12 other comments or questions from the public? 13 Yes, sir. 14 MR. O'KENE: My name is John O'Kene, O 15 apostrophe K-e-n-e. I'm a resident of La Canada. 16 I apologize for my lack of sophistication. I was 17 born in West Virginia, and the first thing I ever 18 heard back then is when the canary dies, it's time to 19 get out of the mine. 20 And what you're not telling us or not 21 explaining, and having read the report at the 22 library, what he's not addressed is: What are the 23 potential problems from a breakdown in the extraction 24 system that permits the escape of any of these vapors 25 into the atmosphere? What is the potential danger?</p>

<p style="text-align: right;">Page 34</p> <p>1 What is the catastrophe level possible? You have 2 3,000 school-aged students in the direct prevailing 3 winds from where your cleanup site is. 4 The best laid plans of mice and men 5 often go awry. Tell me that you're going to have 6 monitoring systems set up around that will let you 7 know that there is more come out than should have. 8 These are the remedial actions. What are the 9 preventative actions? And I think that the parents 10 of the students who send their kids to those schools 11 need to know what the potential dangers are. And 12 that is not put out. That information is not made 13 generally available. I understand that there's no 14 risk while it's in the ground, unless your kid digs 15 down in this dirt. But you're pulling it out of the 16 ground, and you're not telling us what could go 17 wrong, how you're going to prevent that from going 18 wrong, and what remedial action needed to be taken in 19 case it does go wrong. I would simply like to see 20 that, not for myself, but for the general population 21 who live in that area. 22 Thank you. 23 MR. SAUNDERS: We appreciate your comments on 24 that. We will respond to that in the responses in 25 the summary in detail.</p>	<p style="text-align: right;">Page 36</p> <p>1 MR. SAUNDERS: Sir, could you please spell 2 your last name. 3 MR. FIEDLER: F-i-e-d-l-e-r. Like Fiedler, 4 but no baton. Some people recognize the name. 5 Is there SuperFund money being 6 expended for this meeting? 7 MR. RIPPERDA: No. All the cleanup is being 8 paid for by NASA. 9 MR. FIEDLER: Where is the SuperFund money in 10 this cleanup? 11 MR. ROBLES: Actually, the answer, Mark, all 12 money is being spent by NASA. Not the SuperFund, the 13 federal SuperFund. It's being paid through NASA. We 14 have to put a line item in Congress and get 15 appropriate funds, and that's what we do. But 16 Congress appropriated funds to come through NASA for 17 cleanup. 18 MR. FIEDLER: Great. NASA, not JPL or Cal 19 Tech? 20 MR. ROBLES: Right. NASA is paying 100 21 percent of the bill right now. 22 MR. FIEDLER: There were, I think, two 23 proposed systems that were shown on the slides up 24 there. The first one shows to preventing the VOCs 25 from entering the atmosphere as that young man --</p>
<p style="text-align: right;">Page 35</p> <p>1 MR. ZUROMSKI: And let me just say the level 2 of detail as we were talking about earlier today is 3 really for a written response because we don't have 4 all that detail here in front of us today. 5 But what we can tell you, in general, 6 is that, as we talked about earlier today, the 7 systems are designed such as that when there are 8 types of upsets in the system, such as the vacuum 9 break or a vacuum leak or some other type of leak in 10 the system, the system automatically shuts down. And 11 we also have an operator that is on the site at least 12 daily that is monitoring the system to make sure 13 there are not those types of problems. 14 But we need to address that. The 15 detail that you're asking for today, that really 16 needs a written comment, and we will look back at the 17 feasibility study and see exactly those types of 18 detail that you're looking for. Thank you, though. 19 MR. SAUNDERS: Any other comments or 20 questions? 21 Yes, sir. There's a mike right 22 there. 23 MR. FIEDLER: My name is Dick Fiedler. My 24 office is in Lincoln Avenue Water's domain. Also I 25 live in [unintelligible]. Just a couple questions.</p>	<p style="text-align: right;">Page 37</p> <p>1 (Discussion held off the record.) 2 MR. FIEDLER: There were two descriptions, 3 alternative A and B up there. I'm just kind of 4 wondering which one are we talking about, the first 5 one that had extraction and removing the VOCs before 6 they go into the atmosphere or another one because I 7 didn't see another one? 8 MR. ROBLES: The alternative number two. The 9 first alternative was no action. And that includes 10 air circulating. Base soil vapor extraction includes 11 that. 12 MR. FIEDLER: Does the VOC removal require 13 heat? 14 MR. ROBLES: No. 15 MR. FIEDLER: So, therefore, the VOCs that 16 are underground basically live there until the 17 pressure is such that they are volatilized? 18 MR. ROBLES: They are in vapor form. They 19 are particles -- the chemicals are around particles, 20 and you pump air through the soil. They volatilize and 21 that comes up the pipe and you put them through a 22 carbon system, like a Britta filter, but larger, and 23 it's captured in there. 24 MR. FIEDLER: I think the VOCs are in a 25 liquid form until you apply the pressure?</p>

<p style="text-align: right;">Page 38</p> <p>1 MR. ROBLES: Yes, they are in a liquid form. 2 MR. FIEDLER: And the Navy is going to be in 3 charge of this operation? 4 MR. ROBLES: [Unintelligible.] 5 MR. FIEDLER: And they've been doing it out 6 at Vandenberg? 7 MR. ROBLES: Yes. 8 MR. FIEDLER: Who else has been employed to 9 do the work? 10 MR. ROBLES: Other subcontractors that we've 11 had are Force Wheeler. 12 MR. FIEDLER: But they're doing some analysis 13 work. Who is doing the actual VOC removal? The 14 Navy? 15 MR. ROBLES: The Navy. 16 MR. FIEDLER: Under contract with someone 17 else? 18 MR. ROBLES: No. Under contract to NASA. 19 MR. FIEDLER: So it's Navy equipment? 20 MR. ROBLES: Navy equipment, and they sub it 21 out to other subcontractors. One of them is Geofund 22 here who is actually doing the on-site work. 23 MR. FIEDLER: The on-site work removal? 24 MR. ROBLES: Yeah 25 MR. ZUROMSKI: I'm Richard Zuromski from the</p>	<p style="text-align: right;">Page 40</p> <p>1 actual fieldwork. 2 We have another contractor, Patel, 3 Patel Engineering Institute, who is the contractor 4 who set up this meeting here today; and they also do 5 the [unintelligible] plan and the mailings that were 6 sent out. But they're also doing the detailed 7 technical analysis of the way the soil extraction 8 wells that are going to be put on the site are going 9 to go. So we have two contractors out working to do 10 this work. First there's Patel. When they try to 11 decide where those wells are going to go, and then 12 once we've decided where they're going to go, we'll 13 give the rest of the work back to Geofund to install 14 the wells and install the systems. And that's the 15 great scheme of how it all works. 16 MR. FIEDLER: So Patel, under your auspices, 17 is the consulting engineers? 18 MR. ZUROMSKI: Yes. 19 MR. FIEDLER: And Geofund is at the site, is 20 actually going to do the work? 21 MR. ZUROMSKI: Yes. 22 MR. FIEDLER: Congratulations. 23 Now, what is the assumption that this 24 soil remediation removing what's in the soil will 25 have no effect on what has gone into the groundwater</p>
<p style="text-align: right;">Page 39</p> <p>1 Navy. 2 How it works is NASA sends money to my 3 office, the Navy office, and my office then contracts 4 out with Navy contractors to do the work. The 5 contractor who is actually doing the field work for 6 the [unintelligible] soil vapor extraction and is 7 also doing -- taking the soil vapor samples is 8 Geofund Incorporated, and we have a couple of 9 representatives from them here today. And if you 10 talk to them, they're out there in the field at least 11 four, five, six days a week operating the system, 12 taking samples, and running the system under contract 13 with the Navy. But we get our money from NASA. And 14 it's all under a big -- what Mr. Saunders said 15 earlier, a memorandum agreement between NASA and the 16 Navy. 17 MR. FIEDLER: I appreciate that, and I'm glad 18 everybody is getting paid. 19 Are they going to do the rest of the 20 cleanup, or does that go out to bid to the lowest 21 bidder? 22 MR. ZUROMSKI: No. What's happening is we 23 have two separate contractors. Geofund is one 24 contractor that is actually doing the fieldwork under 25 an existing Navy contract. So they're doing the</p>	<p style="text-align: right;">Page 41</p> <p>1 as of now? Increased VOCs into the groundwater could 2 result from this vaporization process? Decreased 3 VOCs, I know that would be the hope, but what do you 4 think really reality means? 5 MR. ZUROMSKI: The reality is, as Mark 6 Ripperda said earlier today and I said, the reality 7 is that this technology actually removes the 8 chemicals from the soil and pulls them above ground 9 for treatment so that they never reach the 10 groundwater. 11 And as you can see from the results of 12 our preliminary results, from just our pilot test of 13 the soil vapor extraction at the JPL site, we did 14 actually physically remove 200 pounds of these 15 chemicals from the soils before they ever reached the 16 groundwater. So it will actually remove the 17 chemicals from the soil. 18 MR. FIEDLER: I understand the theory. I 19 think I can almost guarantee you that we've probably, 20 at Lincoln Avenue, removed over 200 pounds of the 21 VOCs that you're talking about that you extracted by 22 vapor extraction. And I imagine the City of Pasadena 23 has removed more than that in their groundwater 24 treatment. 25 My question is: If you really don't</p>

<p style="text-align: right;">Page 42</p> <p>1 know what's going to go down versus what's coming up, 2 even though you know what's coming up, it might be 3 more that goes down, I think NASA should do increased 4 testing at the Pasadena water sites and at Lincoln 5 Avenue sites to find out if this is going to be a 6 factor. Because if we have to start using more 7 activated carbon to remove those VOCs, as far as I'm 8 concerned, it's -- there's going to be hell raised on 9 who's paying for it. You understand? So I just 10 don't think you really know. I don't know. I've 11 tried to study the process at length. I don't think 12 anybody necessarily knows what is going to happen to 13 all those VOCs, but you already know they've gone 14 down there and they've contaminated the groundwater. 15 So now -- I mean, we may think that this soil 16 remediation is a Godsend, you know; it's going to 17 solve all the problems. Don't bet too many martinis 18 on it. 19 MR. SAUNDERS: And Richard -- 20 MR. ZUROMSKI: We're going to have to -- 21 MR. FIEDLER: I really would like to have a 22 transcript of this meeting -- not in the library, but 23 sent to Lincoln Avenue so we can understand and have 24 it in our books. 25 Is that permissible?</p>	<p style="text-align: right;">Page 44</p> <p>1 a cloud which could mean evacuating not only the high 2 school children, but the children above? And then 3 there's a riding stable, and it's pretty difficult to 4 evacuate a hundred and some horses. Then we have 5 quite a bit of evacuation going on a very narrow and 6 crowded street, on La Canada Boulevard. 7 Is there some kind of a chemical 8 problem here? 9 MR. SAUNDERS: Well, ma'am, again, we have 10 your comment and it's something that we should 11 respond to in a written response in more detail, and 12 that's what we want, to wait for the responsive 13 summary. I think that would be more appropriate. 14 MR. ZUROMSKI: I think that leads right into 15 the level of detail as far as chemicals combining and 16 forming toxic clouds are really beyond what we can 17 answer for you right now. But what we can, with the 18 limited response I can give you right now, is that 19 when and if there is an earthquake and when and if 20 there are some power failures, the system operates 21 all in a vacuum. When it shuts off, there's 22 nothing -- you know, the chemicals stay in the 23 ground. There's no more drawn to the surface. So 24 there really couldn't be probably enough risk that 25 they would escape to the atmosphere because none</p>
<p style="text-align: right;">Page 43</p> <p>1 MR. ZUROMSKI: We can take that request under 2 advisement. 3 MR. FIEDLER: That's all I have to do. 4 MR. ZUROMSKI: Thank you. 5 MR. FIEDLER: I thank you very much. 6 MR. ZUROMSKI: Thank you. 7 MR. SAUNDERS: Any other questions or 8 comments. 9 Yes, ma'am. 10 MS. SCHRAHAZON: My name is Randi 11 Schrahazon, S-c-h-r-a-h-a-z-o-n. Down where I'm 12 [unintelligible] I have two children at the La 13 Canada High School. And are any of the four 14 chemicals that you mentioned, is it possible in the 15 event, say, of an earthquake when monitoring the 16 leaks would no longer be a leak, it would be a crack, 17 would these four chemicals come together and produce 18 something like when a train has a crash and they have 19 the cloud of smoke and they have to evacuate an 20 area? 21 I mean, not to be personal. I just 22 got out of jury duty today -- because I taught 23 chemistry, but I would not even begin to use that 24 excuse to solve this problem. But could those 25 chemicals, once turned into a gas, combine and create</p>	<p style="text-align: right;">Page 45</p> <p>1 would be drawn out anymore. But, again, as far as 2 the formation that you're talking about, please 3 submit those in written comment, and we'll give a 4 detailed written response to your comment. 5 MS. SCHRAHAZON: I'm just curious -- when a 6 carbon filter is removed, you said it's recycled. 7 How? What's that process? 8 MR. ZUROMSKI: Sure. I'm really not sure of 9 the cost. Actually, what we do is they're in a big 10 carbon canister, and when the carbon canister becomes 11 full of chemicals, we take it off-site to a recycling 12 facility and basically a brand-new canister is put 13 inside. I'm not sure of the actual costs, though, 14 actually, of one those canisters. Again, if you 15 like, I could give you -- 16 MS. SCHRAHAZON: Again, I'm just saying as 17 they're transporting the carbon filters with those 18 very condensed chemicals, they would have to just 19 about drive by the high school. And good luck if 20 it's during pickup and drop-off. And if there was an 21 accident and it did fall off the truck -- I mean, I 22 know these are all what-ifs, but there's a lot of 23 children there, a lot of panic. Maybe with all that 24 in La Canada they should have have some kind of 25 contingency plan here, knowing a truck with chemicals</p>

<p style="text-align: right;">Page 46</p> <p>1 will be traveling by the school. Maybe do it after 2 school. Maybe do it in the evening. 3 MR. ZUROMSKI: Again, we will respond to that 4 in writing. But the transportation of hazardous 5 waste and chemicals off-site, we do use a very 6 [unintelligible] to do that. But for details like 7 that, again, submit your questions and we'll respond 8 to that. 9 MR. SAUNDERS: And just to reiterate a couple 10 of things. What you're providing to us is official 11 comment that's going into the record, and it will be 12 responded to. If you want to write even more 13 details, feel free to submit them, but we have your 14 comments now for the record. And you will get a 15 written response in response to some of them. 16 And just to clarify one other thing, 17 again, our project managers here have been responding 18 to some of the questions because they are dealing 19 with information that's already out in fact sheets 20 and it's very general information. When we get to 21 hypotheticals and more detailed types of questions 22 and comments, we are required to respond officially 23 in response in a summary, and we can't really give a 24 response here at this particular meeting. 25 Typically, in this situation, project</p>	<p style="text-align: right;">Page 48</p> <p>1 But just, you know, the environmental 2 climate in Washington [unintelligible], but funding 3 for environmental cleanups has been pretty constant 4 whether it be Democrats or Republicans. That doesn't 5 get messed with that much. And EPA in California 6 still has the authority to take action against NASA. 7 So if Congress were to say, "We're not going to give 8 you money to clean it up," then EPA can take an order 9 against them, which maybe doesn't mean anything, but 10 we have the authority to make them do it. But if 11 Congress just flat out says no, we can't override 12 Congress. But Peter has the information. 13 MR. ROBLES: Believe it or not, even though 14 this is a friendly [unintelligible] administration 15 they have been sending us, they are not adverse to 16 environmental. They are supporting funding. 17 The way the funding works at NASA is 18 like it works at other agencies. The actual funding 19 for SuperFund or environmental issues is expensed. 20 It can't be touched. You have to put in actual line 21 item in the budget for that agency. So with NASA 22 going off doing some rocket testing, doing some 23 research, and at the bottom there is this SuperFund 24 budget that you have to put down. 25 Once Congress funds that, and they</p>
<p style="text-align: right;">Page 47</p> <p>1 managers don't even respond at all to any of the 2 questions. It's very general, but they want to give 3 you some feedback. 4 Do we have any other questions or 5 comments? Feel free to come on up. We really 6 appreciate. 7 MR. SHOPTSBERGER: Terry Shoptsberger, 8 S-h-o-p-t-s-b-e-r-g-e-r. I'm a little confused about 9 what the SuperFund really is, if NASA is paying the 10 bill. Also, the second question, [unintelligible] 11 all the way through located in [unintelligible] with 12 the current environmentally unfriendly administration 13 in Washington, how can you begin and how do you 14 guarantee that it's going to continue? 15 MR. RIPPERDA: So the first part about 16 SuperFund and what is it. My whole description of 17 Congress passing this law that created a tax, all 18 that money is only paid for abandoned sites. So EPA 19 spends that money when the site has been abandoned 20 and nobody else is going to clean it up. 21 But the sites operating, then Congress 22 gave EPA the authority to make the operating entity, 23 in this case NASA or particularly operating with 24 NASA's money, but we can make them spend their money 25 to clean it up. Peter will talk about the budget.</p>	<p style="text-align: right;">Page 49</p> <p>1 usually fund it at first, that is spent. We are 2 programmed -- we've budgeted three and a half million 3 a year. This year it will be a lot more because they 4 feel that it's important to start the work here. We 5 have been pretty consistent over the years to get 6 something, and we've been cut a little bit and 7 getting more, but we've never been totally axed out 8 of any funding. So we're pretty sure that we'll be 9 funded for that in that sense. 10 And just to get back to Mark, the 11 SuperFund process is a way for the government to deal 12 with these issues because it puts the onus on us. We 13 can't put a line item in a budget until we get on the 14 SuperFund list. So in one sense, we like the 15 SuperFund because it allows us to immediately put a 16 line item in the budget once we get in the SuperFund 17 process, and that's what helps us. 18 Do you want to stand up and ask a 19 question? 20 MS. GONZAL: Sure. What timeline are we 21 talking about in terms of getting approval for the 22 budget? 23 MR. ROBLES: Could you state your name for 24 the record again. 25 MS. GONZAL: My name is Cynthia Gonzal.</p>

<p style="text-align: right;">Page 50</p> <p>1 MR. ROBLES: The budget -- we usually are 2 talking a five-year cycle plan. Every five years. 3 So this year we're planning for this year and the 4 next five years, next year, next five years. So 5 that's usually how the budgets work. 6 MS. GONZAL: But specifically in terms of 7 when you begin the work -- to do the cleanup process. 8 MR. ROBLES: We are planning -- once we get 9 approval [unintelligible] to expand what we're doing 10 right now, the pilot study. So we are doing 11 something. But we want to be able to start the whole 12 work as soon as possible. 13 MS. GONZAL: But you don't know what date 14 that is? 15 MR. ROBLES: In the next six months, we want 16 to start the construction of the VOC treatment 17 system. 18 MS. GONZAL: The second part of that: What 19 is the rate of migration or absorption in the soil to 20 the groundwater without this situation? 21 MR. ROBLES: I wouldn't even hazard a guess. 22 We need to give a formal response to that. We will 23 give you a formal response to that. 24 MR. SAUNDERS: Who would like to ask 25 questions next? Please feel free to come up to the</p>	<p style="text-align: right;">Page 52</p> <p>1 should be put on your chemicals of concern list. 2 It's not on it right now because you didn't think it 3 was a problem, but the work that they're doing there 4 indicates that it goes into the fine particle soil 5 and really doesn't come out that easily. 6 He was also thinking -- suggested that 7 in the 40 years since we quit dumping into the wells, 8 into these seepage tanks, why hasn't all of that 9 already vaporized? And he's guessing that maybe it's 10 tied up with some other product that really also 11 needs to come out, which won't come out on a 12 vaporization. I may not be reading this right, but I 13 think that was the idea. So that perhaps needed to 14 take a little more attention. 15 And there's a little more here, some 16 of it, but I don't want to repeat it all without 17 reading, and I won't try to do that now. I just want 18 to say I absolutely feel that we need to remove this 19 material from the earth and set an example for the 20 entire country and for private industry. And do it 21 and get it rolling so that it becomes a doable 22 process for any old gas station and anybody who owns 23 property. So I just want to express my own concern 24 that we make this possible and to do it the best way 25 we possibly can. And if we find more stuff than we</p>
<p style="text-align: right;">Page 51</p> <p>1 mike. 2 Sir, before we let you come up, I'd 3 like to get any other people first. You will get 4 another chance once we get other speakers, unless 5 there are no other speakers that would like to speak 6 right now. 7 Yes, ma'am. 8 MS. SWAIN: My name is Barbara Swain, 9 S-w-a-i-n. I'm not in this field at all, but I have 10 a nephew at UC Berkley who has been involved in the 11 steam extraction process. And I have sent him some 12 information about this and asked him for his 13 comments. And I sent him information that I took 14 from the summary report. And I just wanted to pass 15 along a couple of things. And, actually, I can pass 16 along his whole response, which is -- 17 MR. SAUNDERS: If you'd like to give it to 18 the court reporter, sure. 19 MS. SWAIN: Okay. 20 MR. SAUNDERS: She can enter it into the 21 record. 22 MS. SWAIN: The one comment was he's actively 23 working on a project about removing perchlorate. And 24 apparently this is a little more difficult than we 25 might have thought, and so he wasn't sure that it</p>	<p style="text-align: right;">Page 53</p> <p>1 thought -- every project that the steam extraction 2 has taken on, at least each of the reports I've 3 read -- Livermore Lab, the Edison site, the Naval Air 4 Station in Alameda, which the Navy people probably 5 know all about -- it seems like there's more stuff 6 than anybody ever expected no matter who was doing 7 the estimate. 8 So thank you. 9 MR. RIPPERDA: I have a quick question: Is 10 that a form you can turn in? 11 MS. SWAIN: Absolutely. I just printed it 12 off the Internet. It was an E-mail. We were just 13 going back and forth. So I will give it on the court 14 reporter. 15 MR. SAUNDERS: Do we have anybody else that 16 would like to provide any comments or questions? 17 Feel free. This is your opportunity. We like the 18 feedback from you. We really appreciate this. We 19 have a lot of information. Any other comments or 20 questions? 21 Well, we have comments and questions 22 from the individual that already commented, so I'll 23 go ahead and start with him if there's nobody else at 24 this point in time. 25 Okay, sir, why don't you come on up.</p>

<p style="text-align: right;">Page 54</p> <p>1 MR. CRIPPEN: Bob Crippen again. 2 C-r-i-p-p-e-n. 3 Earlier some of the discussion sounded 4 like this was going to be the first time that 5 something toxic had been removed from JPL. Clearly, 6 it's a large facility. Toxic, hazardous materials 7 are moved in and out of there on a regular basis, 8 just like they are at a gas station. This is nothing 9 new. It must meet current policies, and whatever 10 materials are going past the high school -- there's 11 lots of materials going past the high school on a 12 regular basis. I just want you to keep that in 13 mind. 14 Question: Is there an estimate of how 15 much material has been dumped at the site? It's 16 probably very difficult because it goes back to the 17 '30s, '40s, and '50s. It probably wasn't monitored. 18 MR. ZUROMSKI: Actually, I can't tell you an 19 estimate of what was dumped, but I can tell you an 20 estimate of what we believe to be the actual VOCs in 21 soil, soil vapor, which is estimated from two to five 22 thousand pounds of VOCs. That's an estimate of how 23 much is in the soil and soil vapor. I'm not sure how 24 much was actually put into the seepage pits. 25 MR. CRIPPEN: Of two to five thousand pounds</p>	<p style="text-align: right;">Page 56</p> <p>1 pound? A pound? A pound and a half? 2 MR. ZUROMSKI: That was a pilot study done 3 over 14 months. 4 MR. CRIPPEN: So it would be half a pound a 5 day? 6 MR. ZUROMSKI: [Unintelligible.] 7 MR. SAUNDERS: We can respond in more detail 8 in the responses. 9 MR. CRIPPEN: One last question: Where is 10 the -- what I wrote down here is currently operating 11 extractor? I don't know if it's currently operating. 12 Where was the testing well? 13 MR. ZUROMSKI: It's right next to the fire 14 station in the parking lot of building -- right next 15 to the security fire station from the parking lot. 16 MR. CRIPPEN: The new building? 17 MR. ZUROMSKI: Yes. The brand-new building. 18 MR. CRIPPEN: Thanks. 19 MR. SAUNDERS: Thank you. 20 And you had a question. 21 MS. COMPTON: Hi. Cynthia Compton, 22 C-o-m-p-t-o-n. I heard a couple times -- I heard a 23 couple comments, "That's a great question. Would you 24 please write it down." And so my question is: Do we 25 have to write up our spoken questions?</p>
<p style="text-align: right;">Page 55</p> <p>1 in the soil, what percent do you think is 2 recoverable? 3 MR. SAUNDERS: Again, that's something you 4 can save to the response to his question. 5 MR. CRIPPEN: I guess you would probably have 6 to try and experiment -- 7 MR. ZUROMSKI: We try. Generally, I can't 8 give you a number of how the number is going to be. 9 MR. CRIPPEN: I understand. 10 MR. ZUMROWSKI: A hundred percent. 11 Ninety percent. What I can say is that we have 12 regulatory levels that we have to meet. When we do 13 the soil vapor extraction, we have to extract 14 chemicals to those levels. And when we get below 15 those levels, we can shut the system off. So when we 16 meet those levels, that's when the cleanup is done. 17 And those levels are set in a decision which we 18 agreed with the state and the fellow from the EPA to 19 clean up this site. 20 MR. CRIPPEN: Okay. I think a little earlier 21 we talked about what if something goes wrong. What 22 if gases escape into the air? It raises the 23 question: You recovered 200 pounds in how many 24 days? What is the rate? I mean, if the thing was 25 wide open for a day, how much would escape? A half a</p>	<p style="text-align: right;">Page 57</p> <p>1 MR. SAUNDERS: Ma'am, I stated that. What 2 you said verbally is for the record right now. 3 MS. COMPTON: Okay. 4 MR. SAUNDERS: If you want to submit any more 5 detailed questions, you can. But what you have said 6 right now is for the record, and it will be responded 7 to. 8 MS. COMPTON: And it will be responded to. 9 Okay. Those responses will be [unintelligible]. 10 MR. SAUNDERS: No. They will be put together 11 in a response [unintelligible]. 12 MR. ZUROMSKI: However, if you do want a 13 personal response sent to your home to your comment, 14 just put your address on the comment card, and I 15 think there's a little box you can check that says, 16 "I want the written response," and we will mail you 17 your response. So in addition to the responses in 18 the summary, we will also mail the personal responses 19 to your questions. 20 MS. COMPTON: So for me to receive a response 21 to other people's questions, I have to find -- what 22 is that document called again? -- response to 23 summary? 24 MR. RIPPERDA: This is a pretty small group, 25 and, hopefully, everyone signed in. Can you send the</p>

1 responses to everybody that attended the meeting?

2 MR. COMPTON: That would be great if we could
3 all read all the responses. I know there were some
4 great questions I would like to see the responses to,
5 as well.

6 MR. ZUROMSKI: Again, as Mark said, we can
7 send it. If everybody does want a copy of the
8 response in the summary that's here at the meeting --
9 when you signed in make sure you signed it before you
10 leave today, and I guess as long as you're signing in
11 we'll just make sure that the folks who have signed
12 in and have attended these meetings will receive a
13 copy.

14 MR. SAUNDERS: I just want to clarify
15 something again. What Richard said, this comment
16 sheet, if you fill it out and state at the bottom
17 that you would like to get a written response back,
18 that's perhaps the best way to do it. Otherwise, we
19 will be sending these responsive summaries to people
20 who don't want copies of it, and also wasting the
21 taxpayers money in the process, so we don't want to
22 send unsolicited material.

23 If they want solicited material, you
24 can fill out the comment sheet here and state
25 specifically when you turn it in that you would like

1 a written response.

2 (Discussion held off the record.)

3 MS. COMPTON: The soil vapor extraction
4 operation, I heard you say that there will be an
5 operator there daily. Does that mean he will be
6 there continuously during the time of operation? So
7 the concern about the gases leaking or anything like
8 that, it won't necessarily be caught by a realtime
9 person that's there at the site at the time it's
10 operating?

11 And I was going to ask the same
12 questions on the current presidential administration:
13 Is the line item he's talking about or the NASA
14 budget that's for the SuperFund cleanup efforts, is
15 that limited to a certain percent and does that
16 impact the overall NASA budget?

17 MR. ROBLES: It's called ECR, environmental
18 compliance regulation. It's approximately 45 to 50
19 million a year, [unintelligible] -- excuse me. So
20 it's a small amount, but it is a consistent amount,
21 and it's always taken out as part of that.

22 Congress won't let us
23 [unintelligible]; so it's not impacted from the
24 standpoint of, you know, it's always there. It's
25 always required. It's always been filled in one form

1 or another. Sometimes you get more, but it's never
2 been you're not going to get. Because understand
3 that SuperFund is a continual process. You can't
4 just stop it in the middle. Plus the regulators will
5 get real mad at us.

6 MR. SAUNDERS: I think there was a comment
7 that each budget is planned five years in advance.
8 You don't just plan for that for the next year. The
9 process is already started, the money funds for five
10 years.

11 Any other questions or comments?

12 MR. FIEDLER: It just came to my mind. Dick
13 Fiedler again. Since the Navy has been involved in
14 this for some time now, I was just wondering from a
15 material standpoint, material balance standpoint,
16 these wonderful chemical engineers the Navy has, if
17 you estimated, as you already said, 2,000 to 5,000
18 pounds of VOCs, question mark, question mark, have
19 you calculated, just for the heck of it, for the last
20 years that JPL has funded the Pasadena
21 [unintelligible] and well water and the stuff that
22 Lincoln has been doing just on activated carbon
23 liquid absorption, have you calculated just how many
24 pounds of VOCs Pasadena and Lincoln has removed from
25 the groundwater compared to what you were saying now

1 remains in the groundwater? Hasn't that calculation
2 been made?

3 MR. ZUROMSKI: No. But that will be part of
4 our summary. But no. That would be some of the
5 work.

6 Again, put your comment in writing.
7 That is something that -- I'm not sure -- let me just
8 say overall how the SuperFund process works is even
9 if -- when we respond to your comments, we're not
10 only responding to you; we're also responding to EPA
11 and the state regulators. And what happens is when
12 we do our Record of Decision, which is the final
13 binding agreement for cleanup at JPL, what is taken
14 into account are the facts that we already decided on
15 as far as the type of technology to use but also
16 other factors. One, community input, which is what
17 you're doing tonight, and also regulatory acceptance,
18 which considers how they feel about the technology
19 plus how they addressed questions like you're raising
20 tonight. So those type of questions and input are
21 things that the regulators may now ask us to go back
22 and do before they'll sign a Record of Decision.

23 MR. FIEDLER: With all the questions that
24 have been asked tonight, I presume that on the
25 record --

<p style="text-align: right;">Page 62</p> <p>1 MR. SAUNDERS: Your questions are on the 2 record. 3 MR. FIEDLER: -- there are going to be some 4 answers? 5 MR. ZUROMSKI: Yes. 6 MR. SAUNDERS: Yes. You don't have to submit 7 them in writing unless you want to submit something 8 in more detail. We have them for the record. 9 Do we have any other questions or 10 comments from the public? 11 Yes, ma'am. Please step up to the 12 mike. 13 MS. UNDERWOOD: My name is Nancy Lee 14 Underwood, and I am Underwood Loss Control 15 Environmental 16 MR. SAUNDERS: Would you spell your last 17 name. 18 MS. UNDERWOOD: Underwood. Underwood. 19 I just wanted to make a comment to one 20 of the young ladies, and I know when you're -- I'm a 21 [unintelligible] driver contractor, and I've been 22 around for 19 years, but I wanted to ask a question 23 pertaining to how CPR transporting -- he mentioned 24 something about transporting hazardous waste near the 25 school. There are -- I'd like to answer that</p>	<p style="text-align: right;">Page 64</p> <p>1 MS. GONZAL: Last question. 2 MR. SAUNDERS: Again, please state your name 3 for the record. 4 MS. GONZAL: Sorry. Gonzal, G-o-n-z-a-l, 5 last name. 6 This doesn't in any way affect the 7 community by virtue of the number of people that are 8 here. My concern is: How public will this hearing 9 be made to the community? 10 MR. ZUROMSKI: Are we talking about how we 11 advised of this meeting? 12 MS. GONZAL: How we responded to the concerns 13 of the community that are present in the meeting? 14 MR. ZUROMSKI: That is what we call a 15 response summary, what we've been referring to 16 tonight. What happens is we collect all the comments 17 that were received either in writing or given orally 18 here tonight. And what we do is we take each of 19 those comments by themselves and in response to your 20 written responses, and we put together a document 21 that's called a responsiveness summary. And as we 22 mentioned earlier tonight, we're going to mail it to 23 everybody that has been present at this meeting. 24 We're going to mail you a copy of this responsive 25 summary. However, that responsive summary is also</p>
<p style="text-align: right;">Page 63</p> <p>1 question. 2 It's not done [unintelligible]; it's 3 done under a controlled environment. The Department 4 of Transportation has hazardous regulations that any 5 hazardous waste contract must apply to before 6 transporting on any local streets. So all the plans 7 are made in advance, you know. The director has to 8 write a whole plan and all the regulatory 9 requirements have to be in line with that so it's 10 safely done. 11 Another area I just want to 12 [unintelligible], and then I'll be done. Anytime 13 there's an environmental contract that 14 [unintelligible], you have your geologists, 15 hydrogeologists, who I report to at our 16 [unintelligible] on a regular basis. I operate all 17 the time monitoring the environmental -- 18 environment -- getting [unintelligible]. This is so 19 they know exactly, if it goes anywhere near, there 20 are engineering controls if you have any exposure to 21 the environment. 22 MR. SAUNDERS: Thank you. 23 Any other comments or questions, 24 feedback from the public? Again, this is a great 25 opportunity.</p>	<p style="text-align: right;">Page 65</p> <p>1 put into what we call our information depositories 2 which are about three or four libraries that are 3 mentioned in the pamphlet that's up at the front desk 4 of the proposed plan. We put a copy of that in there 5 for anybody else who maybe did not come to the 6 meeting. They can come and look at it there. 7 MS. GONZAL: How about the local newspapers 8 like "The Star News"? 9 MR. SAUNDERS: You have a reporter right over 10 here. 11 MS. GONZAL: Okay. Just asking. 12 MR. SAUNDERS: Any other comments? 13 Questions? Feedback? Please feel free to step up 14 and express yourself at this time. No one else that 15 would like to ask any further questions? No other 16 comments. Yes. 17 MS. SUTLAFF: This is just a comment just to 18 let you guys know, I am a reporter with the "Pasadena 19 Star News." And I may or may not write a story from 20 today's, but I did write a story for Sunday's paper. 21 And I just wanted to tell people about it just -- you 22 can get it off the web, and I encourage you to buy 23 "The Star News." But it is a concise explanation of 24 what they're planning to do, and it gives a little 25 history. So our website is www.Pasadenastarnews.com.</p>

<p style="text-align: right;">Page 66</p> <p>1 And they did place advertisements for this, as well. 2 So I wrote that article so that people in the 3 community would know about the meeting. 4 MR. SAUNDERS: Could you state your name. 5 MS. SUTLAFF: I broke the rules. It's Visha, 6 V-i-s-h-a, Sutlaff, S-u-t-l-a-f-f, as in Frank. 7 MR. SAUNDERS: And this is also the third 8 public meeting we've had, and I know that she has 9 attended at least two of the public meetings. And 10 we've had them at roughly two different locations. 11 Two of them were in two different locations in JPL, 12 and this is the third meeting. Which is rather 13 unique. Most public meetings for remedial action for 14 proposed plans do not have three meetings, public 15 meetings. In fact, the guidance from U.S. EPA is 16 basically one public meeting, and we've had three of 17 them. I just wanted to tell you. 18 MR. ZUROMSKI: And in addition to the article 19 that Visha did in Sunday's paper, she also did an 20 article previously from the first public meeting in 21 the "Pasadena Star News." And also I believe it's 22 Saturday's "Foothill Leader" edition, there's another 23 article, interview with Peter Robles and myself about 24 the actions that we're taking at OU-2. So there are 25 circulating out there some articles that have been</p>	<p style="text-align: right;">Page 68</p> <p>1 provide any verbal comments or questions tonight, to 2 submit your questions and comments to Peter Robles 3 remedial project manager here at JPL. You have his 4 address up here. It's also listed in the proposed 5 plan fact sheet that is available in the back where 6 we have the poster board displays. 7 If there's nothing else at this time, 8 thank you for attending. Good night. 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>
<p style="text-align: right;">Page 67</p> <p>1 done on the site. 2 And you can speak with us about those 3 afterwards. We're going to be available right after 4 this comment period is closed. You can speak with us 5 on a one-on-one basis. And also back to our 6 information depositories, all of those newspaper 7 articles and clippings can be found in our 8 information depositories, as well. So you can go 9 back and read those articles at a later date. 10 MR. SAUNDERS: Any other comments, questions, 11 feedback from the public? This is your great 12 opportunity to give us feedback. We appreciate it, 13 everything that you say. It makes us do our job 14 better. Any other questions? 15 If not, I want to thank you for 16 attending tonight's meeting. I encourage you to 17 review and comment on the proposed plan. Final 18 decision regarding cleanup will be made after public 19 comments have been received and considered. 20 Keep in mind, as stated, that the 21 public comment period started May 7th and runs 22 through July 11th, 65 days, which is, again, a rather 23 unusual time. It's longer than normal that's 24 recommended for a public comment period. 25 So feel free, if you didn't want to</p>	